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WEEKLY REPORTS

of the Division of  
WESTERN IRRIGATION AGRICULTURE  
Bureau of Plant Industry  
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Newlands

During the two-week period ending January 8 the maximum temperature was 54° and the minimum, 13°. The mean temperature was 33.6°. There was .27 of an inch of precipitation.

The weather has remained exceptionally mild for this period of the year, the minimums varying from 22° to 29°. As a general rule, zero or sub-zero weather is recorded. The Lahontan Reservoir contains 194,000 ac. ft. more water than it did last year at this time. This has been due to the heavy runoff from the watersheds of the Carson and Truckee Rivers during the storms of mid-December.

The price of livestock has fallen considerably during the past two weeks with beef being the hardest hit. At the present time the top price for finished beef on the San Francisco market is 8 cents. Hogs are selling at 8 cents and lambs at 8-1/2 cents on the local market. On January 5 the feeder lambs at the station were sold for 8-3/4 cents at Reno. Butterfat is bringing 32 cents per pound, and eggs, 22 cents per dozen. Hay is \$8 per ton in the stack.

The lamb-feeding experiment at the station has been finished. It was found that second-year sweetclover hay proved to be a poor roughage. Those pens receiving 1-1/4 pounds of grain per lamb per day turned out more finished lambs than those fed amounts below or above this standard. Higher rations caused frequent ills, including scouring which made it necessary to decrease the amount of grain. Lambs fed 1-1/4 pounds of rye finished more choice lambs than the pens receiving 1-1/4 pounds of barley.

The State experiment station has decided to purchase three additional purebred heifers. If possible, bred heifers due to calve within two months will be purchased.

The hog work continues with the winter experiment being conducted along the lines of work done by Morrison and his associates at Wisconsin. A protein supplement mixture known as the "Trio-protein supplement ration" is being checked against the usual method of feeding at this station; that is, alfalfa hay, skim milk and barley.

The work at the station consisted of repairing structures, grinding hay, planting shade trees, and white-washing corrals.

Temperatures for the 2-week period ending January 22: Mean, 34.9°, maximum, 63°, minimum, 17°. The mean wind velocity was 2.58 miles per hour, and there was .29 of an inch precipitation. The weather continues to be exceptionally mild; however, there has been an additional four feet of snow in the Sierras.



Newlands, cont'd

Station activities consisted of additional dirt hauling to a few of the low areas that have developed, hauling manure, pruning the young orchard, preparing flower gardens for spring planting, and constructing fences.

The summary of the lamb-feeding experiment data shows that all pens made poor growth during the period they were receiving sweetclover hay as a roughage. (The hay used was second-crop of 2nd-year sweetclover.) This was not in keeping with the findings last year when 1st-year sweetclover was used. This part of the experiment will be repeated next year when new plantings of the clover will be available. The lambs showed a different reaction during the time which all pens received 3rd-crop alfalfa. After the initial change, the pens made rapid gains. The pen receiving  $1\frac{1}{4}$  lbs. of rye per lamb per day proved to have the greatest number of finished lambs, with the pens receiving  $1\frac{1}{4}$  lbs. of barley as second. Those groups receiving more or less grain than  $1\frac{1}{4}$  lbs. per day graded out fewer choice animals. A summary of the amount of grain required per pound of gain showed that the 1-lb.-of-rye-group required 4.11 lbs.; the 1-lb.-of-barley group required 4.05 lbs.; the  $1\frac{1}{2}$ -lbs.-of-rye group 4.45 lbs.; the  $1\frac{1}{4}$ -lbs.-of-barley group 4.65 lbs.; the  $1\frac{1}{2}$ -lbs.-of-rye group 5.38 lbs.; and the  $1\frac{1}{2}$ -lbs.-of-barley group 4.92 lbs.

Three more purebred Holsetin heifers have been purchased by the State for their dairy herd at the station. This makes a total of six purebred heifers, with the possibility of additional purchases a little later.

Mr. Headley has just completed a summary of the more recent hog experiments that have been conducted at this station. This summarization appears in a bulletin release of the Nevada State Station entitled, "Hog Feeding Experiments," Bulletin #147.

Some expansion of the underground water studies is being undertaken. Intensive study is being given several of the older observation wells of the station area that have consistently reacted differently from other wells in the same area. Additional wells are being drilled in their vicinity, measurements of the water heights are recorded, and samples taken for conductance determinations. After three or four weeks of daily measurements the casings are pulled and new wells drilled, with the location of each new set of wells depending upon the findings of the last. In this manner it is hoped some light will be thrown on the peculiar conditions that are found to exist in the case of the parent well.

E. W. Knight

Huntley

January 8-22

The maximum temperature during this period was  $51^{\circ}$  and the minimum,  $13^{\circ}$ . There was .10 of an inch precipitation. The winter, so far, in this area has been unusually mild with light precipitation and temperatures generally above normal. In the mountain areas of the Yellowstone watershed the amount of snow is reported to be low, although further west the snowfall is nearly normal.

Due to the open winter and the comparatively small number of stock in feed lots, feed prices, locally, have declined and alfalfa hay is selling at \$6 and \$7 per ton on farms. The market for fat lambs continues dull and lambs moving to the market are returning but little or no profit from the feeding operations.

Dan Hansen.



Prosser

The weather conditions for the five-week period ending January 15 were normal with respect to temperature, and above normal in rainfall. The minimum temperature was 20° and the maximum 62°. The precipitation from January 2 to 15 amounted to .37 of an inch. The precipitation for the month of December was 2.03 inches, which is 1.01 inches above normal; and for the calendar year of 1937 it amounted to 10.97 inches, which is the largest on record in the lower Yakima Valley. The mild weather has permitted the continuation of many farm operations. Plowing has been general throughout the Valley. The depth of snow on the ground of the Snoqualmie Pass in the Cascade Mountains is 70 inches.

Station activities included field cleanup work, orchard pruning, and hauling manure. Mr. Emil Nelson, Research Assistant in Agronomy, has returned from the State College at Pullman. He spent the past two weeks in the station laboratory determining the potassium and phosphorus content of wheat grain and straw grown on the three-year rotation plots that are fertilized with various kinds of nitrogen-carrying fertilizers. Plots 2 and 3 in the Outlook Reclamation Project were plowed. Sugar beets will be planted on these plots next spring.

The yield of corn from the rotation plots for the past season was calculated after the shelled corn was dried. The average actual yield of shelled corn containing 12% moisture was 60.2 bushels per acre for all plots in the rotation series. The highest yield was 90.6 bushels per acre on rotation 52, and the lowest was 28.9 bushels per acre on rotation 24. The variety of corn used was Iowa Hybrid 939.

The average percent sugar in the sugar beets (variety A600) grown on all plots in the rotation series was 16.9. The percent sugar in the beet varieties were as follows: U.S.No. 1, 17.2; U.S.#14, 17.2; U.S.#12, 16.8; U.S.#34, 16.5; and Dippe, 15.2. The percent sugar in the beets grown on plots 3, Outlook Reclamation Project, was 15.3.

The top price of U.S. No. 1 potatoes declined \$2 per ton during this period and is now \$11 per ton, sacks furnished, f.o.b.car. The demand for potatoes is very slow. Apples are moving very slowly and the price is low. Shippers are selling some Extra Fancy Delicious for 90¢ per box (approximately 40# net). Exporters are asking 75¢ per box for Extra Fancy Winesaps. The price of butterfat is now 32¢ per pound. The top price for livestock, f.o.b. Yakima, is as follows: Choice steers \$8; good to choice hogs \$8.25; 1937 choice lambs \$8.

Official visitors at the station were: H. F. Hollands, Agricultural Economist, Wash. State College, Pullman; E. B. Hurd, Bureau of Agricultural Economics, Pullman; W. A. Star, H. C. McKay and F. E. Bernath of the Soil Conservation Service, Ellensburg, Washington.

Carl A. Larson

Scotts Bluff

The maximum temperature for the two-week period ending Jan. 15 was 58° and the minimum, 1°. The mean wind movement was 8.85 miles per hour. There was .06 of an inch of precipitation.

Scotts Bluff, cont'd

The precipitation for December, 1937, amounted to .54 of an inch as compared with the 28-year mean of .35 of an inch. The total precipitation for 1937 amounted to 9.93 inches as compared with the 28-year mean of 13.75 inches. Over half of the total rainfall (5.16 in.) occurred during the months of May, June and October; that occurring during the remainder of the year benefited plant growth very little.

The annual meeting of the North Platte Valley Lamb Feeders Association was held Wednesday, January 5, at Scottsbluff, Nebraska. A resolution was adopted by the Association to protest any proposed reciprocal trade treaty with the British Empire which would lower tariff barriers on lamb and wool shipments from Australia and New Zealand. F. W. Beier, Federal Livestock Statistician of Denver, Colorado, stated that although the present supply of lambs in the U.S. is above the 1936-37 season and meat consumption is less, the supply of lambs is still below normal. He also stated that the increase in the number of lambs on feed in the Colorado-Nebraska-Wyoming territory is offset by a proportionate decrease in the number being fed on the Pacific coast.

An eleven acre tract of strawberry clover which seems well adapted to slightly saline and marshy land has been discovered on a farm in Cedar Valley, about 12 miles northwest of Mitchell. It is not known just how the clover got started in Cedar Valley, but apparently it has possibilities for use on <sup>somewhat</sup> saline land with the water table near the surface. The tract has been furnishing pasture for 37 head of cattle. Efforts are being made to obtain seed of strawberry clover for planting on bottom lands adjacent to the North Platte River; however, the seed is very scarce, and costs from \$3 to \$5 per pound.

Yields of Great Northern field beans from the rotation plots for the past season have ranged from 12.9 to 20.7 bushels per acre.

According to a recent report of F. L. Disterdick, Federal Meteorologist, snow conditions in the watershed of the Pathfinder Dam are exceptionally good at the present time. He stated that the heaviest snow in many years fell recently in that region.

In addition to the routine of caring for the livestock, station activities included hauling manure and sorting certified seed potatoes. Western Nebraska certified Triumph seed potatoes have been selling on a strong market in southern growing sections, due chiefly to the fact that southern growers have rejected certified potatoes produced by western Nebraska's chief competitor, North Dakota. Spindly sprout, a virus disease which has been prevalent in southern test plots of seed potatoes produced in North Dakota, has had a favorable effect on the selling price of seed potatoes--the present price being \$1.25 per cwt. Table potatoes are selling for 65-70¢ per cwt.

The maximum temperature for the week ending Jan. 22 was 60° and the minimum 18°. The mean wind movement was 7.5 miles per



Scotts Bluff, cont'd

hour, and there was .22 of an inch precipitation.

Two pens of 5 dairy cows each were placed on test during the week. The objective of this experiment, which is a duplication of the one conducted last year, is to determine the value of beet tops as compared with alfalfa hay. The grain ration will be the same for both lots; however, for roughage one lot ~~will be~~ fed alfalfa hay alone, while in the other lot each cow will receive ten pounds of alfalfa hay and for the balance of the roughage, beet tops. It is planned to reverse the feed of the pens each 30 days for three periods, with a ten-day preliminary test between each reversal. In order to obtain the individual cow record as well as a lot comparison, records are being kept on each cow.

At the end of the 60-day period of the lamb-feeding test the ten lots made a mean gain of 19.29 pounds per lot. The highest gain of 22.37 lbs. was obtained in lot No. 5, where the lambs are being fed pulp, corn, barley, cottonseed meal, alfalfa, and beet tops. The lowest gain of 16.1 lbs. was obtained in Lot. no. 9, where the ration consisted of barley, cull beans, ground alfalfa (self-fed), and beet tops.

The 1937-38 turkey marketing season in the North Platte Valley has come to a close. Eighteen carloads, totaling around 27,000 high grade turkeys, have been shipped to Eastern markets.

Station activities included sorting certified seed potatoes and hauling manure. A carload of certified potatoes was loaded during the week.

Lionel Harris

Umatilla

During the two-week period ending January 16 the maximum temperature was 58°, the minimum, 28°. The mean wind velocity was 2.80 miles per hour, and the precipitation was .35 of an inch.

Mild weather has prevailed which has made it possible to work continuously in the field. Fields F2, F3 and D, which have been in sweetclover, have been thoroughly disced with a heavy tractor disc in preparation for reseeding sweetclover in the pasture. Manure hauling to F3 continued.

The squashes which have been used as a succulent feed for the dairy herd have been consumed. The unusually mild weather prevented loss by freezing. The herd is being fed Jerusalem artichokes at present. The rate of feeding has been reduced from about 32 lbs. of squash per head to 21 pounds of Jerusalem artichokes per head, in order that the cows may receive approximately the same rate of total digestible nutrients.

The construction of the Umatilla Cooperative electric lines, authorized by the Rural Electrification Administration at a contract price of \$107,000, was begun during the week. The 120 miles of lines cover the area from Echo to Boardman and will serve 492 farms.



Umatilla, cont'd

Field work consisted of ahuling manure, regrading and strawing land, discing, and spring-toothing alfalfa.

H. K. Dean

Yuma

The maximum temperature for the four-week period ending Jan. 22 was 77° and the minimum, 32°. The precipitation amounted to .03 inch.

During 1937 the maximum temperature was 115° and the minimum was 17°. The report from the U. S. Weather Bureau station at Yuma shows that temperatures from January to April were 3.6° below normal, and those from April to December were 2.8° above normal. The month of December was 5.1° above normal for a 60-year period. A frost-free period of 322 days (which is the longest on the station records) was recorded this year. The total rainfall recorded at Yuma for 1937 was 4.43 inches--the 67-year mean being 3.37 inches. The total precipitation at the station was 3.77 inches, which is normal as compared with the 1911-1937 mean.

The lettuce crop now moving to market is low both in quality and price, due to warmer-than-usual weather. For a few days the price was 85¢ per crate. Grapefruit shipments have been restricted on account of the prevailing low prices. Cotton picking and ginning continue on the project, with plenty of pickers now available.

The U. S. Geological Survey report for December shows the flow of the Colorado River at Grand Canyon to have been 410,000 ac. ft. The discharge below Boulder Dam was 365,000 ac. ft., and the estimated storage at the dam on January 1 was 15,050,000 ac. ft.

Station activities included the picking and ginning of cotton, seeding alfalfa and sweetclover plots, pruning trees, repairing fences, general irrigating and cultivating, cutting cotton stalks, discing and plowing cotton land, and hauling manure.

The five operating gins on the project report 12,300 bales of cotton ginned to date. The insecticide control tests on the Schutz farm below Somerton, Arizona, were closed on Jan. 8. All insecticide treatments showed beneficial results, but the Paris Green 10% combined with sulphur 90% produced the largest total gain over the adjacent check plot. In this instance the treated plot produced 4,995 lbs. of seed cotton per acre. The check plot yielded 2,304. The increase was approximately 900 lbs. of lint per acre. The treatments on various cotton varieties on the station showed very little benefit. Insect population counts during the growing season showed light infestations locally, but very heavy populations in the vicinity of Somerton and the Schutz farm. The investigational work on insect population and control is under the immediate supervision of Mr. T. P. Cassidy of the Division of Cotton Insect Control, Bureau of Entomology and Plant Quarantine, with headquarters at Tucson, Arizona.

Yuma, cont'd

Mr. C. S. Scofield visited the station January 18-22 to go over the ground water investigational program on the California side of the project. Dr. Geo. P. Clements, Agricultural Secretary of the Los Angeles Chamber of Commerce, with Mr. D. B. Bloodgood of the Division of Irrigation Engineering, U.S.D.A., were station and project visitors January 19-24.

Final picking weights of all cotton tests on the station were obtained by Jan. 20. Yields in general were somewhat above those recorded in 1936. The yields from the cotton plats in the irrigated rotation test are shown in the following table

Yields of Seed Cotton from the Irrigated Rotations  
at the U. S. Yuma Field Station, with comparisons  
of previous years 1923-1937, inclusive.

: Year :	: Number : of : Plats :	: Maximum :	: Minimum :	: Mean :
: 1923* :	: 21 :	: 1252 :	: 420 :	: 797 :
: 1924 :	: 21 :	: 2136 :	: 280 :	: 904 :
: 1925 :	: 21 :	: 2680 :	: 852 :	: 1514 :
: 1926 :	: 21 :	: 2758 :	: 1044 :	: 1780 :
: 1927 :	: 21 :	: 2026 :	: 664 :	: 1233 :
: 1928 :	: 36 :	: 2584 :	: 668 :	: 1706 :
: 1929 :	: 36 :	: 2410 :	: 696 :	: 1509 :
: 1930 :	: 36 :	: 2544 :	: 612 :	: 1787 :
: 1931 :	: 36 :	: 1730 :	: 474 :	: 1157 :
: 1932 :	: 36 :	: 2008 :	: 310 :	: 1166 :
: 1933 :	: 36 :	: 2360 :	: 580 :	: 1478 :
: 1934 :	: 36 :	: 2880 :	: 888 :	: 1774 :
: 1935** :	: 36 :	: 2736 :	: 672 :	: 1509 :
: 1936 :	: 36 :	: 3596 :	: 568 :	: 1552 :
: 1937 :	: 36 :	: 3468 :	: 1136 :	: 2306 :
: Mean. . . . . :				: .1478 :

\*Pima Variety 1923 to 1934, inclusive.

\*\*Acala Variety 1935, 1936, and 1937.

Based upon an assumed lint percentage of 27 for Pima and 37 for Acala the 1925-1934 ten-year mean yield of lint for Pima is 408 lbs. per acre as compared with a 3-year mean of 662 lbs. of lint for Acala.

E. G. Noble





## W E E K L Y R E P O R T S

of the Division of  
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No. 2

Belle Fourche

January

Abnormally warm weather prevailed until the last three days of the month when subzero temperatures occurred. The maximum temperature of 53° occurred on the 15th and the minimum of -14° on the 29th. A trace of precipitation was recorded on sixteen days but the total precipitation was only .20 of an inch. Strong winds were of frequent occurrence.

During the month some twenty-four WPA workers were employed clearing the windbreak plantings, chopping wood and repairing the water reservoir. The CCC crew hauled four hundred yards of gravel for the roads around the buildings.

Lamb Feeders' Day was held on January 12 with approximately 175 attending the dinner and program. The lambs were on the Sioux City market January 19.

On January 26 fourteen 4-H Club boys assembled their lambs at the farm. The 210 lambs were on feed for 100 days, during which time the boys were given advice as to rations, as well as assistance in weighing the lambs. The Stockyards Company of Sioux City paid the boys' expenses to Sioux City to see the lambs graded, sold and slaughtered. The transportation was provided for on regular shippers contracts. Much interest has been shown in this project. A lamb dinner was attended by 85 people, including the parents of the boys. A program was given relating to 4-H Club work and lamb feeding, under the supervision of the State 4-H leader, H. M. Jones.

Beyer Aune

Huntley

The maximum temperature for the two-week period ending Feb. 5 was 62° and the minimum, -31°. There was .04 of an inch precipitation. The lowest temperature so far recorded during the present winter occurred during this period when the minimum was -31°. The cold period lasted only two or three days and was followed by temperatures above freezing so that there is no snow-covering left on fields.

Most of the lambs from the feed lots have been moved to market. Further market declines recently for fat lambs have brought the prices locally to \$7 and \$7.50 per cwt., and since most of the lambs went into feed lots at \$9, rather heavy losses have resulted from the feeding operation.

Huntley, cont'd

Construction work on the Yellowstone Valley R.E.A. electric power line is nearing completion. It is expected that electric current for the Huntley Project and other valley sections between Billings and Custer will be available by March 1.

Station activities included repairs to buildings and machinery and the routine work of caring for livestock.

Messrs. Hansen and Seamans attended the conference of Experiment Station workers and County agents at the State College, Bozeman, during three days of the week of January 17.

Dan Hansen

Newlands

The mean temperature for the two-week period ending Feb. 5 was 32.9°, with a maximum of 53° and a minimum of 12°. The mean wind velocity was 3.95 miles per hour. There was .67 of an inch of precipitation.

The weather during January was exceptionally mild. The mean temperature was approximately 4° above normal, and the lowest temperature was 12°. Generally, we have subzero temperatures the forepart of January. There has been ample snowfall over the Sierra watersheds. The last report showed 133 inches at the Summit, with further storms reported to be moving in from the Pacific.

The price of farm products has changed very little during the past weeks. Butterfat remains at 33¢; eggs, 18¢; beef, 6½¢; hogs, 8¢, lambs, 7½¢; and hay, \$8 per ton in the stack.

In addition to routine station work of hauling manure, burning weeds, etc., general repairs were made to machinery. At the present time the station tractor is having a general overhauling.

The livestock experiment is progressing satisfactorily. Bad reactors to the mastitis tests are being sold to the butcher. In addition to the 20 cows being milked now and the several heifers that will be milking within the next few months, it is hoped that it will be possible to purchase more purebred stock. Two of the first three heifers recently purchased have averaged 1.6 pounds of butterfat daily over a period of 123 and 139 days respectively. The third heifer has averaged 1.35 pounds during a period of 117 days. These records were made on a twice a day milking schedule.

E. W. Knight

Prosser

The temperatures for the two-week period ending January 29 were as follows: maximum, 56°; minimum, 21°. The precipitation amounted to .43 of an inch.



Prosser, cont'd

Station activities included gathering stones on the rotation plots, machinery repair and orchard pruning. The large office in the office building was kalsomined and the floor painted.

Due to the mild weather conditions, sheep men of the district have been able to pasture their flocks on the surrounding ranges where the grass has been unusually plentiful for this time of the year. The operations at the various lambing camps will begin soon.

The top price of U.S.No.1 potatoes declined \$1 per ton during this period and is now \$10 per ton, sacks furnished, f.o.b.car. Potatoes have moved very slowly from the valley. The apple market continues to be dull, with some shipments being made in bulk at \$19 to \$20 per ton.

The City of Prosser has been drilling a well for domestic water for the past several months. On Jan. 10th artesian water was struck. The first flow amounted to 150 g.p.m. As the structure being drilled in was porous rock, the well was drilled 30 ft. deeper, to the 510 ft. level and the flow obtained amounted to 540 g.p.m. The water emerges at a temperature of 65°F., and is soft water. The total salt content is approximately 172 p.p.m. The calcium content amounts to 9 p.p.m., and the sodium, 40 p.p.m.

Carl A. Larson

Scotts Bluff

The maximum temperature for the two-week period ending Feb. 5 was 57°, and the minimum was -10°. The mean wind movement was 9.05 miles per hour, and there was 0.4 of an inch precipitation.

The Bureau of Reclamation camps at Lake Minatare and Mitchell have adopted a program to be inaugurated April 1 requiring the planting of approximately 160,000 trees for windbreaks. The trees which will be planted as field windbreaks for farmers on the Pathfinder Irrigation District, will be concentrated in areas subject to severe soil blowing.

A bindweed control district has been established in Mitchell Valley. This is the first district in the State established to control and eradicate bindweed and other perennial weeds under the new State law. The weed law, involving the formation of weed control districts, is administered by the State Department of Agriculture. Districts are formed in precincts where the majority of farmers agree to pay a tax, levied according to the amount of work necessary, to be used specifically in the prevention or eradication of the more troublesome weeds. Eradication cost will be considerably higher than prevention costs. In the Mitchell precinct the bindweed is not serious, but has become established on some farms.



Scotts Bluff-cont'd

Mr. T. W. Parry, Manager of the Pathfinder Irrigation District, stated that prospects for water are much better now than a year ago. The Pathfinder dam now has 168,000 acre feet in storage as compared with 83,000 acre feet a year ago. The Guernsey dam has 30,000 acre ft. as compared with 13,000; and Lake Minatare, 37,000 acre feet as compared with 7,200 ac. ft. last year at this time. The snow conditions in the watershed of the Dam have been reported to be the best since 1925.

On the basis of the present market prices, lamb feeders of the valley expect to lose from \$1.50 to \$2 per head on lambs yet to be marketed. The majority of the lamb crop in the North Platte Valley is still on feed. In view of the low market prices for fat lambs, due in a large measure to the low price being paid for wool, the lamb feeders of the valley, headed by John R. Jirdon of Morrill, have engaged upon a program to encourage the Federal Government either to purchase wool or to make loans on wool to prevent the price from dropping any further. The cattle feeders of the valley also are losing money this year. Losses on shipments made to date have ranged from \$25 to \$30 per head.

Station activities included sorting potatoes, hauling beet tops from the rotation plots, and manure from the dairy corrals. Although the winter has been very mild, no plowing has been possible because of the frozen soil.

Station visitors included Dr. F. D. Keim, Chairman of the Agronomy Department; Professor D. L. Gross, Extension Department; and Mr. C. W. Watkins, Senior Extension Forester, College of Agriculture, University of Nebraska.

Lionel Harris.

## W E E K L Y R E P O R T S

of the Division of  
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No. 3

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Huntley

The maximum temperature for the two week period ending Feb. 19 was 50° and the minimum was -6°. There was .16 inch precipitation. Several days with minimum temperatures at zero or slightly below occurred during this period. The winter season so far has been comparatively rather open and mild. The recent cold was accompanied by light snows locally with heavier precipitation reported in other sections of the State and particularly in the mountain areas.

Meetings between local beet growers, Great Western Sugar Company officials, representatives of beet labor and representatives of the Agricultural Adjustment Administration were held in Billings during the past week. This is one of a series of hearings being held in various beet growing sections of the country on matters relating to the current season's contract for beets and rates for beet labor under the Sugar Control Act. With the prospect of higher prices for labor and other higher production costs, the growers Association is asking for an increase in the price to be paid for beets with a guaranteed minimum of \$5.50 per ton in addition to the benefit payments expected under the Sugar Act.

Station work included the routine work of caring for livestock and the grading of potatoes for market.

Dan Hansen

Newlands

The maximum temperature for the two-week period ending Feb. 19 was 58° and the minimum, 13°. The mean temperature was 35.8. The mean wind velocity was 5.35 miles per hour, and there was .43 inch precipitation.

By the middle of February the snow on the ground in the mountains was the heaviest recorded in a number of years. There had been a rather continuous storm period of 17 days. The heavy fall of snow blocked all traffic over the highways and delayed train service. There is ample water assured for the irrigation season of 1938, and some fear exists of flood damage. This is particularly so if the snowpack comes off rapidly.

Farm prices remain about the same. The few hogs produced are selling locally for 8¢. Little demand exists for finished beef or lamb. The lower prices for finished meat animals and the high fall prices asked for feeder stock has resulted in a curtailment in demand. There is estimated a surplus of some 5,000 tons of hay on the project. Hay can be purchased for \$7.50 per ton in the stack.

Station work has consisted of the usual late winter work such as hauling manure, repairing machinery and hauling gravel.



Newlands, cont'd

The dairy work has continued as formerly planned. Little mastitis is detectable in the herd at the present time. The heavy culling has had some effect, but probably more moderate weather conditions during the past winter have been as great a factor as the culling.

On Feb. 14 a meeting was held at the station by the State Extension office, at the suggestion of the U. S. Department of Agriculture. The object was to conduct a study of alfalfa production problems in Nevada in order that definite recommendations might be available at a later date for presentation to the Department's hay specialists at a final meeting to be held on March 25. The February 14 meeting was the first of several that will be held between now and March 25. The plans call for conferences in various parts of the state. Those in attendance were: Mr. Thos. Buckman, assistant director of Extension; Mr. L.E.Cline, marketing specialist of the Extension office; Mr. F.B.Headley of the State Station staff; Mr. Ed Reed, in charge of administering the Soil Conservation work in the state; Mr. Al Reed, county agricultural agent of Pershing County; Mr. Wilber Stodick, county agri. agent of Douglas County; Mr. Paul Maloney, county agri. agent of Humboldt County; Mr. Royal D. Crook, county agri. agent of Churchill County, and the station superintendent.

E. W. Knight

Prosser

The temperatures for the four-week period ending February 26 were as follows: Maximum, 50°; Minimum, 16°. The precipitation amounted to .71 of an inch, part of which fell in the form of snow.

Station activities included routine office and laboratory work, hauling manure on farm fields, removing locust trees and cutting them into wood. The lambing camp operated by the Mercer Sheep Company is very active, with hundreds of new-born lambs.

The directors of the Sunnyside Valley Irrigation District have agreed to continue the cooperative reclamation project at Outlook, Washington. Sugar beets will be used on the plots.

The Utah-Idaho Sugar Company has contracted for 13,500 acres of sugar beets. This is more than double the acreage harvested last year. The average yield of sugar beets last year from the area between Ellensburg and Walla Walla, Wash., was 15.2 tons per acre. If the same average yield is maintained this year, the new factory at Toppenish, Wash., will be taxed to capacity to process the beets.

Potatoes are being sold by farmers for prices as low as \$3 per ton for combination No. 2's and culls. There were 4,000 carloads less produce shipped from the Yakima Valley at this time of the season this year compared to last season.

Mr. Wm. Burkitt, research student of the Dept. of Animal Husbandry, State College of Washington, arrived at the Station Feb. 8 to conduct lamb feeding experiments in cooperation with the station.

Carl A. Larson



Scotts Bluff

The maximum temperature for the three-week period ending Feb. 26 was 65° and the minimum was -6°. The mean daily wind movement was 7.3 miles per hour, and there was .19 of an inch precipitation.

A group of approximately 150 distressed lamb feeders of the North Platte Valley met at the Lincoln Hotel in Scottsbluff on Feb. 11 to discuss the desirability of sending a delegation to Washington with a view to securing help from the Government in bolstering the price of wool. The dressed price of fat lamb has been good, but this past week the pelt credit allowed was only \$1.60 as compared with \$3.60 a year ago.

The 20th Annual Lamb Feeders' meeting of the station was held Thursday, Feb. 17. The event included a tour of the feed yards of three prominent feeders in the valley: Mr. Neal Barbour, Mr. Wm. Ledingham and Mr. Fred Attebery; and an inspection of the ten lots of experimental lambs at the station. A lamb dinner was served at noon, and the meeting occupied the afternoon. Speakers at the meeting included Professors H.J.Gramlich, M.A.Alexander, W.W.Derrick; Messrs. Paul Swanson, T.C.Halley and Elmer Forsling. The mean daily gain of the 10 lots of lambs on feed at the station ranged from .29 of a pound in lots 8 and 9 to .39 of a lb. in lot 5. The rations fed and the feed cost per 100 lb. gain were as follows:

<u>Lot</u>	<u>Ration</u>
1.	Shelled corn, alfalfa, \$6.63.
2.	Corn, barley, cottonseed meal, bone meal, ground corn stover (ears removed), \$7.13.
3.	Barley, cottonseed meal, bone meal, ground corn fodder (ears on), \$6.60.
4.	Corn, barley, dried pulp, soybean meal, alfalfa, beet tops, \$5.50.
5.	Corn, barley, dried pulp, cottonseed meal, alfalfa, beet tops, \$4.90.
6.	Corn, barley, dried pulp, alfalfa, beet tops (grain self-fed), \$5.01.
7.	Corn, barley, dried pulp, alfalfa, beet tops (hand-fed), \$4.98.
8.	Cull beans, dried pulp, ground alfalfa, beet tops (self-fed), \$4.75.
9.	Cull beans, barley, ground alfalfa, beet tops (self-fed), \$5.15.
10.	Dried pulp, barley, beet molasses, wet pulp, alfalfa, beet tops, \$4.66.

Lamb feeders in the Scottsbluff feeding section shipped 89 carloads of lambs during the week ending Feb. 12, F. W. Beier Jr., Federal Livestock Statistician, reported. This compares with 67 cars for the same week last year and 88 cars for the same period in 1936. Feeders in this area have shipped 525 cars of lambs since Jan. 1 as compared with 317 in 1937 and 597 two years ago.

Business men, dairy officials and others interested in reclaiming poorer irrigated lands in the North Platte Valley, at a session in Scottsbluff this week, endorsed a proposal to seek assistance from the Univ. of Nebraska. They will ask the Univ. to station an experienced dairy farm expert in the valley to survey the possibilities for rebuilding "marginal" lands through forage crops and dairy herds and to interest farmers in the movement. Members of a committee studying the reclamation plan stated that about one-fifth of the irrigated valley land is now non-productive.

Scotts Bluff, cont'd

Sugar beet prices and wages for labor in 1938 were important questions discussed this week at a meeting of more than 600 growers, processors and laborers from three states before A.A.A. officials in Scotts Bluff.

Station activities included hauling beet tops and manure, sorting table stock potatoes, hauling feed for the livestock, applying farm manure to the rotation plots in Field K so-treated, hauling hay, weighing experimental lambs incident to the closing of the lamb feeding experiment this season. The lamb feeding tests were officially closed February 12. Ninety lambs were shipped to the Omaha market on February 23.

Lionel Harris

UmatillaFebruary

The weather during the month was mild. With the exception of a week during which snow was on the ground, field work was possible throughout the month. The maximum temperature was 53°; the minimum, 11° and the mean, 35.4°. The precipitation was 1.46 inches and the mean wind velocity was 2.1 miles per hour.

The precipitation from Oct. 1, 1937, to Feb. 28, 1938, was 5.95 inches as compared with a mean for these months since 1911 of 4.87 inches. Due to the unusually warm weather during the winter the snow on the upper Umatilla River watershed is very much below average. As of Feb. 1 the snow was 18% of that of 1937 and the accumulation since then has been less than normal. The Umatilla project reservoir will be filled before the end of March but the McKay Reservoir, supplying the Stanfield and Westland projects, probably will not be filled this year. The water rights without storage will be very short.

Fields F1, F2 and D were disked and spring-toothed preparatory to reseeding to sweetclover for pasture. The last of the Jerusalem artichokes were dug for cow feed and the 1938 planting of approximately an acre was made. The land formerly occupied by corn and sorghums in Field B4 was graded and seeded with certified Hardistan Alfalfa. Also, alfalfa was seeded in field E1 recently used for curly top experiments.

The Superintendent spent three days at Corvallis conferring with officials of the Oregon Experiment Station relative to the 1938 State work at this station. Official visitors included C.A. Larson and H.P. Singleton of the Prosser Station.

H. K. Dean



W E E K L Y   R E P O R T S  
of the Division of  
WESTERN IRRIGATION AGRICULTURE  
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(Not for publication without the prior consent of the Division)

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Huntley

The maximum temperature for the two week period ending March 5 was 62° and the minimum -1°. There was 0.06 of an inch precipitation.

Warm weather prevailed during the early part of the period and a start was made in some sections of the valley in field work. Recent light snow falls and severe freezing have stopped this outside work.

Following a season of light feeding operations there appears to be a surplus of hay and other feeds locally. There is but little demand for alfalfa at the present price of \$6.00 and \$7.00 per ton. The demand for beans is light and this crop is quote at \$2.00 to \$2.25 with a large part of the crop still held on farms.

Station activities have included sorting potatoes for market and wiring the station buildings.

Dan Hansen

Newlands

The maximum temperature for the two week period ending March 5 was 59° and the minimum 17°. There was 0.68 of an inch precipitation.

Farm prices for local crops declined somewhat during this period. Hay is now selling at \$7.00 per ton. Eggs are quoted at 19½¢ a dozen, butterfat at 30¢ a pound, beef at 6½¢ a pound, lambs at 8¢ a pound and hogs are selling locally at 8½¢ a pound.

Station work has consisted of hauling manure, graveling roads, repairing irrigation ditches and preparing for some additional plantings of shrubbery on the station grounds.

Dr. L. R. Vawter of the University staff was a station visitor during the period. He examined thoroughly some of the cows and heifers in the dairy herd that do not appear to be pregnant. He collected, for analysis, one sample of blood from a heifer that recently aborted. It is proposed to conduct rather frequent examinations of all cows in the herd, thus avoiding too great a delay in the compilation of data on the causes of shy breeding or illness of individual cows.

E. W. Knight

Prosser

The maximum temperature for the two week period ending March 12 was 67° and the minimum 27°. The precipitation amounted to 0.28 inch.

The Mercer Sheep Company has moved all its sheep to sagebrush pasture in the surrounding hills. Lamb feeding trials have been com-

Prosser Cont'd

pleted and Mr. William Burkitt of the Animal Husbandry Department of Washington State College has returned to Pullman.

The Utah-Idaho Sugar Company has now contracted 15,114 acres for sugar beets in the area extending from Ellensburg to Walla Walla. A small additional acreage will be allowed and the Company has already begun to refuse acreage that is not particularly suited for sugar beets.

A wood flume will be installed on the Outlook reclamation plots this year in connection with water table studies. This flume has already been made up at the Station and will be hauled to Outlook for installation. Land leveling on plot 3 at the Outlook project has been completed and preparation for planting beets has begun.

Due to the open winter the supply of hay is plentiful in the valley. The price of hay is \$9.00 in the stack, but there is scarcely any movement. U. S. No. 1 potatoes and sacks are \$8.00 per ton and the demand is slight. Barley and oats are \$25.00 and \$26.00 per ton, respectively. Hops are 12¢ to 15¢ per pound, baled, f.o.b. car. Butterfat is 28¢ a pound.

Station visitors were Dean Edward C. Johnson, Washington State College, Pullman; Mr. W. A. Rockie, Regional Conservator and Mr. Paul McGrew, assistant Conservator, Soil Conservation Service, Spokane; Mr. M. L. Nichols, Assistant Chief of the Division of Research and Mr. Snyder, Project Inspector, Soil Conservation Service, Washington, D. C.

C. A. Larson

Scotts Bluff

The maximum temperature for the two week period ending March 12 was 67° and the minimum 12°. The precipitation amounted to 0.49 inch.

Nebraska Agricultural Conservation officials predicted that 1938 benefits payments probably will be greater than the \$115 average received during 1937. Officials also announced that Western Nebraska potato growers have received \$8,145.13 to date for feeding potatoes to livestock under federal surplus diversion program. On Wednesday, March 16, the Nebraska Potato Improvement Association will hold its annual meeting at Gering. One big feature of the 1938 meeting will be the announcement of the 400-bushel club members. Growers who produced an average of 400 bushels or more of U. S. No. 1 potatoes on a five acre tract will be honored.

Farmers of Nebraska's first bindweed control district, Mitchell precinct, elected five supervisors under the State bindweed control law, thus completing the organization of the district. The supervisors plan to meet within the next few days to formulate plans for fighting the bindweed menace in this region.



Scotts Bluff Cont'd

The prospect of an ample supply of irrigation water this summer was seen this week in a report released by the State engineer's office. In the latter part of February the Pathfinder reservoir had 178,460 acre feet of water, as compared with 91,600 last year; the Guernsey reservoir 35,870 acre feet as compared with 14,210 a year ago; and the Minatare reservoir held 26,020 acre feet as compared with 7,600 acre feet at this time last year.

Station activities for the two week period included sorting potatoes, hauling hay, repairing fences on the Walker place, plowing, disking and harrowing Field K, burning weeds, painting the interior of the bunk house and cottage on the Walker place, and cleaning the evaporation tank preparatory to taking the first seasonal evaporation readings. The balance of the lambs were shipped to the Omaha market on the 9th. The first load shipped to market on Feb. 23 were sold for \$8.00 per cwt.

Lionel Harris

Yuma

The maximum temperature for the two week period ending March 12 was 82° and the minimum 38°. The precipitation amounted to 0.83 of an inch.

The precipitation recorded was a part of the general storm which flooded portions of the South Coastal Basin in California. Storms in northern and central Arizona at the same time caused flash floods from the Bill Williams and Gila rivers to increase the flow of the Colorado river at Yuma. The former was gaged at approximately 20,000 second feet and reached Yuma on March 5. The Gila flood was reported to be about 18,000 second feet and did not reach Yuma until March 12. A small levee in the Welton-Roll section east of Yuma gave way but more benefits than damage were reported as the flood water was used to irrigate lands where available. Underground water replenishment along the Gila river was an additional benefit.

Cotton ginning on the project was completed at the end of February, with 13,024 bales being harvested. The preparation of land for the 1938 cotton crop is now in general progress. Lettuce shipments continue with about 60 cars a day moving to market. Prices have advanced during the past week from \$1.00 to \$1.50 a crate. Grapefruit prices continue at a low level with early returns from about a fourth of the crop indicating a price of about \$10.00 a tone to the grower.

Station work included the building of a reinforced concrete vault and general repairs to the office building, preparing cotton lands, hoeing and roguing alfalfa nurseries, cleaning and repairing ditches, and general irrigating and cultivating.

Mr. W. F. Wight was a station visitor on March 6 to inspect the cooperative work with root stocks for deciduous fruits.

E. G. Noble

## M I S C E L L A N E O U S

Mr. Lionel Harris left for his permanent headquarters at the Scotts Bluff Station on the 5th after spending 10 days at the Washington office.

Mr. Beyer Aune was in Washington on the 2nd and 3rd in connection with a Lamb Feeders tour. While on the trip he visited Chicago, New York, Boston, Philadelphia, and Baltimore.



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Mar. 13 - Mar. 26, 1938

No. 5

Rubidoux Laboratory

Under date of March 27, Mr. Scofield reports as follows regarding the progress made in respect to the establishment of the Regional Salinity Laboratory, a Bankhead-Jones Project approved by the 11 Western States last December:

On Monday and Tuesday, Drs. Auchter and Magistad and Messrs. Blaney, Taylor and I conferred. The major discussions taken were (a) to proceed with a survey of the land here at the laboratory as a basis for planning the arrangement and location of the structures including the culture beds, (b) to drill a well on the new tract as a source of uniform water supply, (c) to do some reconditioning on the present laboratory building to make the south wing the administration headquarters of the Regional Salinity Laboratory, (d) to proceed with fencing the new tract and with irrigating it to get an alfalfa cover established, (e) to proceed with the construction of culture beds of two types, i.e., shallow beds for annual crops and deep beds for perennial crops with the necessary equipment to operate these beds, (f) to construct at least one unit of a greenhouse with a suitable small head house, (g) to construct culture beds at the Indio station (h) to start investigations and begin to make the plans for a physiological laboratory to be constructed during the fiscal year 1939, (i) to initiate some investigations in respect to methods of irrigations as related to water penetration and root-zone leaching on the new tract in connection with establishing the alfalfa cover, (j) to convene a meeting of the Regional Council composed of representatives of the 11 Western State Experiment Stations and the cooperating Bureaus of the Department to be held here in June, (k) to proceed with the purchase of equipment and laboratory supplies to implement the investigations.

I submitted to the conference a detailed budget estimate for the expenditures for the current fiscal year, allocating the whole of the current allotment of funds. This budget was adopted with certain minor modifications. It was agreed that certain members of the staff of the Bureau of Agricultural Engineering at Pomona would be assigned to the Regional Laboratory, at least part time, for the next few months to make the survey of the tract, plan the layout, and to initiate and supervise the work on methods of irrigation water penetration and the like in connection with the establishment of the alfalfa cover crop, the Regional Laboratory to assume the costs involved in the way of salaries and expenses.

Wednesday and Thursday were devoted to a trip to visit Indio and Torrey Pines. I drove Drs. Auchter and Magistad to Indio Wednesday morning and we went over the station and tentatively selected a location for the culture beds. We also visited the station at Martinez which is co-operative with the Indian Service. At this station when salinity conditions are thought to be acute arrangements were made for a survey of salinity conditions in the irrigation water and in the soil. Mr. W. W. Aldrich, the regional supervisor of work in subtropical horticulture,



Rubidoux Laboratory    Cont'd

stationed at Indio, joined us for the further trip to Torrey Pines. We made the trip by way of Calexico so that Drs. Auchter and Magistad could see something of conditions in the Imperial Valley. We met County Agent Beyschlag and spent the night in Calexico.

This trip through the Imperial Valley afforded an opportunity for me to explain to Dr. Auchter the agricultural and hydrological situation in the Colorado delta. This included, of course, a discussion of plans to irrigate the Yuma and the East Imperial Mesas and the proposal to have investigational work undertaken on one or both of these areas.

From Calexico we drove to the Torrey Pines station and inspected several possible locations on that station for the culture work of the salinity project. It appears to be the consensus that natural conditions at Torrey Pines are suitable for the proposed investigations but there is some question as to the continued occupancy of the land. The present lease expires June 30 and the renewal of a long term lease such as would be required for the salinity investigation will require approval by the electorate of the City of San Diego in a vote which can not be had until March 1939. It is, therefore, questionable whether we should go forward with equipping a sub-laboratory at that station prior to the approval by the City of a long term lease. No decision has been made on that question.

We returned to Riverside Thursday evening. Friday was devoted, by me at least, to matters here at the Laboratory not pertaining directly to the salinity project. On Saturday Dr. Magistad, Mr. Taylor and I had a further conference on the details of (a) making a survey and map of the laboratory tract, (b) the proposed project on methods of irrigation (broad shallow furrows) for the establishment of the alfalfa cover crop, and (c) the equipment required for recording evaporation and temperature data at the main laboratory here at Riverside and at the two sub-laboratories.

C. S. Scofield

Huntley

The maximum temperature for the two week period ending March 19 was 72° and the minimum 9°. There was 0.45 of an inch precipitation.

Field work was started in many parts of the district during this period but was interrupted by a general snowfall on March 17. Moisture conditions on dry lands and ranges are better than for several years' past and winter wheat is in excellent condition.

Terms of a contract for beets for the current year have not yet been announced, awaiting the decision of the A. A. A. as to rates for labor and minimum prices for beets.

Station work during the period included seed bed preparation of the dry land field plots, electrical wiring of station buildings and repairs to farm machinery.

Dan Hansen



Newlands

The maximum temperature for the two week period ending March 19 was 64° and the minimum 19°. The mean wind velocity was 4.78 miles per hour and there was 0.45 of an inch precipitation.

Station work consisted of hauling manure, disking grain plots, repairing roads, and interior painting.

On the evening of March 15 a dairy meeting was held under the auspices of the Extension Service. The primary purpose of the meeting was to acquaint dairymen with the work being done at the Newlands Field Station with dairy cows. Mr. F. B. Headley and the station superintendent were speakers on the program.

E. W. Knight

Prosser

The maximum temperature for the two week period ending March 26 was 67° and the minimum 19°. There was 0.73 of an inch precipitation.

The return of sugar beets to the Yakima Valley as a cash crop has been so rapid that farmers are experiencing some difficulty in obtaining beet drills to plant the crop. In the Prosser district there are 175 acres of beets to be planted by each drill available.

Sugar beets were seeded on plots 2, 3 and 4 at the Outlook Reclamation Project on March 24. Plots 1 and 6 now in sweetclover will not be planted to beets until an irrigation has been applied.

Irrigation water arrived in the Sunnyside canal near the station on March 26. Water deliveries to farms will not begin for several days.

Station activities for the period included planting beets on the rotation plots, planting beet varieties and plots for spacing studies. Other activities on the rotations included hoeing flume lines, spring-tooth harrowing alfalfa and corrugating alfalfa/sweetclover.  
and

C. A. Larson

Scotts Bluff

The maximum temperature for the two week period ending March 26 was 75° and the minimum 25°. The precipitation amounted to 0.50 inch.

The 19th annual meeting of the Nebraska Potato Improvement Association was held at Gering, Nebr. on Wednesday, March 16. Considerable interest was shown in this meeting by a large number of potato growers. One of the largest groups of farmers in the history of the meeting attended this year. A vegetable growers meeting was held at Scotts Bluff on Tuesday, March 15. Varieties and problems of vegetable growing were discussed before a group of farmers interested in growing vegetables for the canning industry.

Station activities for the period included applying farm manure to plots to be so-treated in Field K, plowing, disking and harrowing, and leveling certain plots to facilitate irrigation. Work has been concentrated on the grain and sugar beet plots, with a view to having a desirable seed bed for planting next month. Owing to favorable weather

Scotts Bluff Cont'd

and soil conditions farmers throughout the valley are actively engaged in the preparation of their land for the 1938 crop. Good moisture conditions exist but some soil blowing has occurred on the lighter soils. This, however, has not been unusually severe owing to rain and a comparatively moderate wind movement for this season of the year.

The price of Triumph stock potatoes has been somewhat stronger during the past two weeks. The remainder of the station surplus of 589 sacks has been sold at 80¢ per cwt. The prevailing price throughout the valley up to recently has been 60¢ per cwt. The second load of station lambs, numbering 204, was shipped to the Omaha market on March 9 and sold for \$9.35 per cwt.

Lionel Harris

Umatilla

The maximum temperature for the month of March was 69° and the minimum 25°. The precipitation was 0.62 of an inch.

The work during the month consisted principally of preparation for the season's operations. Some fencing was done, ditches were cleaned, and alfalfa plots were spring-toothed. One of the uniform alfalfa wilt resistant nurseries was established in cooperation with the Division of Forage Crops. Thirty-seven of the newly developed strains, seventeen Turkistan strains, and a number of checks brings the total number under test to 62. Rod-rows, in duplicate of each, were planted. The commercial fertilizer experiment on alfalfa was thoroughly disked and reseeded early in the month. Another application of the fertilizer was made this year. The plantings of sweet clover and alfalfa are generally doing well, and did not suffer materially from the winds.

The turkey hens started laying late in February and one incubator was set on March 19 and another on March 26.

Mr. B. F. Dana spent March 29 and 30 on the station making early tomato seedings in the hot bed and planning this year's work.

Tomatoes, beans and squash will receive most of the attention with contemplated plantings upwards to ten acres. A special effort will be made to make rigid selections of the Umatilla Marblehead squash with a view to releasing seed for distribution later.

Requests for information and farm visits for this year exceeded any previous records.

H. K. Dean

## M I S C E L L A N E O U S

Technical Bulletin No. 614 entitled "Influence of Farm Manure on Yields and Sucrose of Sugar Beets" by Stephen H. Hastings, S. B. Nuckols and Lionel Harris is now available for distribution.



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Vol. XL

Mar. 27 - April 16, 1938

No. 6

Belle Fourche

March

March was abnormally warm with no wide extremes in temperatures and very little rainfall (.60 inch). The mean temperature was 37° which is 6° above normal; the maximum, 69°; minimum, 8°. On March 24 about four inches of wet snow fell amounting to .47 of an inch precipitation. This is the first beneficial moisture recorded since September.

Field work has consisted of duckfooting, disking, levelling and harrowing the plots. Owing to the lack of moisture, no seeding has been done except in Field I which was summer-fallowed in 1937. This field was planted to a grass mixture consisting of Brome, Crested Wheat, Meadow fescue, Orchard, Bluegrass and white sweetclover. A rate of 25 pounds per acre was seeded together with two bushels of oats. Immediately after seeding the entire field was corrugated for irrigation. This planting will be clipped at regular intervals during the early part of the summer.

Approximately 25 W.P.A. laborers have been employed cleaning the forestry and orchard plantings, riprapping water reservoir, completing the installation of drainage tile and 200 feet of 4-inch water main and hydrants for fire protection, repairing portable hog houses and cutting wood.

There is an adequate supply of irrigation water stored in the Belle Fourche Reservoir for the season provided there occurs a normal rainfall this spring and during the growing season.

Alfalfa hay in the stack, third cutting, is selling for \$10; second cutting, \$8; and first cutting, \$5. Barley is selling for 75¢ per cwt.; oats, \$1 per cwt.; and shipped-in corn, \$1.15 per cwt.

Beyer Aune.

Huntley

The maximum temperature for the three-week period ending April 9 was 69° and the minimum was 12°; precipitation, 1.39 inches. The total precipitation during the past month has amounted to 1.87 inches. Field work was not possible during this period because of continued stormy weather, and no seeding has yet been done in any of the fields.

A meeting is called during the coming week between the growers and the local sugar company officials, at which time it is expected that terms of a contract for sugar beets for the present season will be arranged. While the minimum price of \$5 per ton has been established for beets testing 16.5% sugar, local growers have not decided on a course of action, pending announcement of the rate for contract hand labor.

Messrs. Hansen and Seamans made a trip to Bozeman on April 8 to confer with officials of the Montana State Experiment Station regarding cooperative work.

Station work included repairs to buildings and machinery, wiring of station buildings, and cleaning seed grains.

Dan Hansen.

Newlands:

The maximum temperature for the four-week period ending Apr. 16 was 75° and the minimum, 12°. The mean wind velocity was 4.85 miles per hour and the precipitation, .35 of an inch.

Farm prices have undergone little change. Butterfat is 29¢ per pound; hay, \$7 per ton; beef, 7-1/2¢ per pound; and hogs, 9¢.

Work at the station has consisted of plowing, cultivating roadways and alfalfa, hoeing weeds, planting barley and spring wheat, irrigating, and repairing buildings.

Four W.P.A. men are employed on a relief project including landscaping, building fences and painting the exterior of some of the buildings.

The first consignment of the 1938 turkey poults has arrived. The brooder houses have been cleaned and repaired, and new gas brooder stoves have been installed to replace the two that have been in use.

Dr. L. R. Vawter, Department of Veterinary Science, University of Nevada, visited the station on April 13. The object of his visit was twofold; first, the routine examination of the dairy herd, and second, to determine if the bulls were carriers of Trichomonas infection. (This infection was recently picked up from an aborted fetus from one of the adult cows of the milking herd). The results of his inspection gave positive proof of such an infection being carried by one and perhaps both bulls.

E. W. Knight.

Frosser

The minimum temperature for the three-week period ending Apr. 16 was 19° and the maximum, 68°; precipitation, 0.28 of an inch. There was some frost damage to cherries as a result of the recent low temperatures.

Irrigation water arrived at the station April 10, which is one week later than usual. The reservoirs which supply water for the Yakima Valley Irrigation System contained 844,000 acre-feet on Apr. 16.

Routine preparation for irrigation was made on the rotation plots. Sweetclover was seeded on three of the pasture rotation plots. A good stand of sugar beets has been obtained on all beet plots in the rotations, and on the three seeded plots in the Outlook Reclamation Project.

The Utah-Idaho Sugar Company is making a \$100,000 improvement in the new factory at Toppenish, which includes new machinery with greater efficiency to process the larger prospective crop.

Butterfat declined 3¢ per lb. during this period and is now selling for 24¢ to the farmer. Asparagus cutting is well under way and the price to the grower for the fresh market is 7-1/2¢ per pound.

Visitors included Dr. E. L. Overholser, Head of the Department of Horticulture, and three graduate students from the State College of Washington; Jack Rodner, Mgr. of the Soil Conservation Project, Ellensburg; G. B. Gosline, Asst. Agricultural Engineer; Lloyd Brown, Watsonville, California; and Dean E. C. Johnson.

Carl A. Larson.



Scotts Bluff

The maximum temperature for the three-week period ending April 16 was 75°; the minimum, 0; mean daily wind movement, 11.0 miles per hour; precipitation, 1.44 inches.

The heaviest storm of the winter swept over western Nebraska on the 5th and 6th. The storm began on the evening of the 5th, with rain and sleet which turned rapidly to snow in the wake of high winds and a falling temperature. Heavy snow, accompanied by strong winds, continued through Tuesday night and Wednesday. During the storm visibility was limited to a maximum of 200 feet. The snow accumulated in drifts ranging from 3 to 6 feet deep on the main highways and traffic was paralyzed for three days; however, most main highways were cleared of snow by Friday. Owing to the short duration of the storm, it is believed that livestock interests have not suffered greatly, as no losses have been reported. The moisture deposited by the storm will be of great value to the ranges and all agricultural interests in Western Nebraska. Precipitation amounted to approximately one inch over the storm area. The storm was heaviest between Alliance and Sidney, Nebr., decreasing in intensity east and west of this line.

The recent storm, adding moisture to an already favorable supply in the dry land soils near Alliance, has rekindled interest in the agricultural possibilities in that area. The acreage of certified seed potatoes on the dry land is expected to be rather large this year.

Owing to the failure of growers and processors to come to an agreement on the 1938 sugar beet contract, only a small acreage of sugar beets has been planted to date. The minimum price of \$5 per ton as determined by Secretary Wallace is not satisfactory to the growers. However, recent conferences have resulted in a contract which will give the grower an increase of 10¢ per ton over the Secretary's approved price, provided the beets test 16% sucrose and sugar nets \$3.75 per cwt. During the latter part of this period, the directors of the Beet Growers Association, Nebraska, announced that a satisfactory contract had been obtained from the Great Western Sugar Company, and released the growers to plant beets as they pleased. It is expected that extensive planting operations will begin next week.

The monthly report of the Federal Bureau of Agricultural Engineering, Division of Snow Survey and Irrigation Water Forecast, shows the reservoir storage, based upon the present conditions on the North Platte watershed, to be 60% greater than that of last year.

Station activities included disking, levelling, harrowing; rolling grain and beet plots in preparation for seeding, and seeding oats, sweetclover, alfalfa on rotation plots in fields K and E; sorting seed potatoes; and hauling snow into the cellar to help maintain cool temperatures during the remainder of the storage year.

Professor H.P. Davis and Mr. George Trimberger were station visitors. A soils class of the University of Nebraska, including approximately 30 students, headed by Dr. Condra and Dr. Keim, and accompanied by the soils staff of the University, visited the

Scotts Bluff, Cont'd

station and the North Platte Valley, Monday, April 4. The group was interested in geology and the general agriculture of western Nebraska.

Lionel Harris.

Yuma

Cooler than normal temperatures, accompanied by high winds, prevailed during the two-week period ending April 16. The maximum temperature was 89°; the minimum, 40°; precipitation, 0.

The early planted cotton on the project has made slow growth; and the subsequent plantings are developing spotted stands on account of the cool weather and drying winds. Re-irrigating and re-planting have been necessary on about one-third of the acreage.

Carrot shipments continue as the major crop now going to market. Approximately 20 cars per day are being shipped. Grapefruit shipments have increased to 5 cars per day, chiefly due to the Government purchase of #2 grade fruit.

Station work included the planting of cotton, harvesting of the second alfalfa hay crop, fertilizing alfalfa and green manure crops with phosphates, painting farm buildings, digging and packing the alfalfa wilt resistant nursery plants, general irrigating and hoeing.

Dr. John W. Carlson of the Division of Forage Crops, Logan, Utah, is at the station supervising the digging and shipping of the various alfalfa nursery plants to Madison, Wisconsin; Lincoln, Nebraska; Manhattan, Kansas; and Logan, Utah. Mr. T. P. Cassidy of the Division of Cotton Insects, Bureau of Entomology and Plant Quarantine, visited the station on April 7th and completed arrangements to continue the dusting work on cotton on the station and in the Yuma Valley in 1938.

E. G. Noble.



## M i s c e l l a n e o u s

THE BORON TOLERANCE OF CITRUS TREES<sup>/1</sup>Introduction

The experiment here described is located on the grounds of the Rubidoux Laboratory at Riverside, California. It involves an area of approximately half an acre and includes 55 citrus trees that were set out about 1910. These trees were originally part of a root-stock experiment, observation on which had been discontinued prior to 1933 when the present experiment on boron tolerance was begun.

The present experiment was planned in such a way as to apply known quantities of boron, as boric acid, to half the trees in the plot. In all other respects the trees were to be treated alike. The objective of the experiment was to observe the effects of boron applied in irrigation water, in low concentrations to mature citrus trees. Prior to 1933 when this experiment was started the plot had been irrigated with water furnished by the Riverside Water Company. This water contains some boron but the quantity is small. Its boron concentration prior to 1930 is not known but since that time it has been generally less than 0.3 p.p.m. and frequently less than 0.2 p.p.m. Since February, 1933 the plot has been irrigated with Riverside City water, the boron content of which has been determined from samples taken at the laboratory once a month.

The present report deals with the events and observations of the first 5 years of the experiment from February 1933 to February 1938. The experiment is continuing. In general it may be said that during the 5-year period the boron added to the irrigation water applied to half the plot has produced mild but characteristic symptoms of boron injury on the treated trees but no measurable effect on the yield or quality of the fruit.

The plot has been irrigated by means of two lines of overhead sprinklers so connected to the main supply line that the quantity of water applied to each half of the plot could be measured. The supply pipe to one line of sprinklers was equipped with suitable apparatus so that known quantities of boric acid could be added to the irrigation water. This apparatus was so placed that, as desired, more boron could be applied to the orange trees than was applied to the lemons. The plot includes 15 lemon trees and 30 orange trees, besides 10 other citrus trees not included in the experiment. The sprinklers of each line water 6 lemon trees in two rows of three trees each and there is a center row of three trees that is watered from each side. Thus 6 lemon trees get boron-treated water, 6 get untreated water and 3 trees are supplied with boron-treated water on one side and with untreated water on the other. Similarly 12 of the orange trees in two rows are irrigated with boron-treated water, 12 are irrigated with untreated water and 6 get boron-treated water on one side and untreated water on the other.

/1 An Interim Report by C. S. Scofield. April 15, 1938.

Because of these differences in treatment and in the number of each kind of trees the quantitative data in respect to the water and boron applied are referenced to the area of ground occupied by one tree. The trees were set 20 feet apart each way so that an area-unit of 400 square feet is used in the following computations and discussion. Furthermore, it is assumed that the depth of soil occupied by the tree roots is 5 feet so that the volume of rootzone allocated to each tree is 2,000 cubic feet. The water-free soil is estimated to weigh 85 pounds per cubic foot, from which it is computed that the block of soil supporting each tree weighs 77,111 kilograms. The "field capacity" of this soil is somewhat less than 20 percent, consequently it is estimated that its mean moisture content is 15 percent. From this it is computed that the volume of water held in the block of 2,000 cubic feet of soil ranges above and below a mean of 11,500 liters.

#### The Regimen of Irrigation

The water supply of the soil is supplemented in part by rainfall and in part by irrigation water. The rainfall is measured by a standard Weather Bureau rain gage, located adjacent to the experimental plot and reported as inches in depth of water. The irrigation water supplied to each line of sprinklers that irrigates half the plot passes through a water meter and its volume is reported in cubic feet. It is computed that an inch of rainfall contributes 943.3 liters of water to the 400 square feet allocated to each tree and that a cubic foot of water distributed through one line of sprinklers contributes 1.029 liters of water to each tree.

During the calendar year 1933 the rainfall on the plot totaled 8.59 inches, equivalent to 8,103 liters per tree. The plot was irrigated 10 times during that year using a total of 42,090 cubic feet of water through each line of sprinklers or 43,311 liters per tree. Thus the total input of water for the year was 51,414 liters per tree, equivalent to 54.5 inches in depth of water input. From what is known concerning soil moisture conditions in the plot it is believed that there is very little percolation of water below the 5th foot of soil. In other words, it is assumed that most, if not all, of the water applied is dissipated by evaporation and transpiration.



The water input both as rainfall and as irrigation for each of the 5 years, 1933-1937, is shown in the following table, both as liters per tree and as depth of water in inches:

Year:	1933	1934	1935	1936	1937
Rainfall, liters	8,103	7,734	10,518	15,461	13,074
Irrigation, liters	<u>43,311</u>	<u>39,305</u>	<u>40,964</u>	<u>24,722</u>	<u>24,387</u>
Total, liters	51,414	47,039	51,482	40,183	37,461
Rainfall, inches	8.59	8.19	11.15	16.39	13.86
Irrigation, inches	<u>45.91</u>	<u>41.68</u>	<u>43.43</u>	<u>26.21</u>	<u>25.85</u>
Total, inches	54.50	49.87	54.58	42.60	39.71

#### The Boron Input

In considering the subject of the boron input involved in this experiment the following points should be kept in mind, (1) an unknown, but probably small, quantity of boron has been contributed to the soil with the irrigation water used from 1910 to 1932, (2) The water used since 1932 on the entire plot has contained some boron the quantity of which has been determined by monthly analyses, (3) The quantities of boron applied to the treated half of the plot have not been the same i.e. more boron has been applied to the oranges than to the lemons, (4) The quantities of boron applied to any tree for any time period may include (a) the quantity contained in the untreated water, (b) the quantity contained in the treated water applied to the lemon trees, and (c) the quantity contained in the treated water applied to the orange trees. When values for boron concentration are used, i.e. milligrams per liter or parts per million for any time period, they may be taken, unless otherwise specified, as implying ratios for the total water applied, irrigation plus rainfall.

The boron input in grams per tree for the year 1933 is computed as follows:

- (1) The weighted mean concentration of the untreated irrigation water used during that year was 0.154 p.p.m.
- (2) The irrigation water applied to each tree was 43,311 liters.
- (3) The quantity of boron applied to each tree for that year with the untreated water was 6.6 grams.
- (4) The total quantity of water applied, irrigation plus rainfall, was 51,414 liters per tree.

- (5) The boron concentration of the total water input was 0.13 p.p.m.
- (6) By means of the first boron applicator on the line supplying the sprinklers for the north half of the plot (the boron-treated part), 5,030 grams of boric acid, equivalent to 880 grams of boron, was added to the irrigation supply during the year.
- (7) This treated water was applied to 27.5 trees therefore each tree received 32 grams of boron during the year through the first applicator.
- (8) By means of the second boron applicator, on the line supplying the treated water for the orange trees, 4,222 grams of boric acid, equivalent to 739 grams of boron was added to the irrigation during 1933.
- (9) This supply of twice-treated water was used on 17.5 trees therefore each tree received 42 grams of boron during the year through the second applicator.
- (10) Each of the fully treated lemon trees received 6.6 grams of boron from the untreated water and 32 grams from the first applicator or 38.6 grams.
- (11) Each of the fully treated orange trees received 6.6 grams with the untreated water, 32 grams through the first applicator and 42 grams through the second applicator, a total of 80.6 grams for that year.

The values for boron input in grams per tree, as given in (10) and (11), are tabulated for that year in table 34/38. The corresponding values for the succeeding 4 years are given in the same table together with the totals for each group of trees for the 5-year period. The second part of the same table gives the mean concentration of the boron, as milligrams per liter or parts per million for the total water input, including irrigation water and rainfall, for each of the 5 years and the 5-year weighted mean concentration. It will be noted that the only boron input in 1935 was that contained in the untreated irrigation water. During the winter of 1934-1935 it was observed that the symptoms of boron injury were developing more rapidly than was desired and it was feared that its continued application at the rate used during the two previous summers would soon injure the trees severely. No boron was added to the irrigation water in the summer of 1935 and during the two following summers the rate of application was reduced to approximately half the original rate.



Table 34/38. The annual boron input, in grams per tree, for the trees of the Boron-Tolerance Experiment on Plot "U", Rubidoux Laboratory, 1933-1937. And below: The boron concentration in milligrams per liter of the total water input.

Year	Input, grams boron per tree					
	Lemon trees			Orange trees		
	Untreated	Guard trees	Treated	Untreated	Guard trees	Treated
1933	6.6	22.6	38.6	6.6	43.6	80.6
1934	4.2	22.2	40.2	4.2	44.1	84.0
1935	4.8	4.8	4.8	4.8	4.8	4.8
1936	2.5	5.5	10.5	2.5	11.5	20.5
1937	2.0	6.8	11.6	2.0	12.8	23.6
Totals	20.1	61.9	105.7	20.1	116.8	213.5

Boron concentration of Input, mgr/liter						
1933	0.128	0.44	0.75	0.128	0.85	1.57
1934	0.089	0.47	0.85	0.089	9.94	1.79
1935	0.093	0.093	0.093	0.093	0.093	0.093
1936	0.062	0.137	0.26	0.062	0.29	0.51
1937	0.053	0.18	0.31	0.053	0.34	0.63
5-Year Mean:	0.088	0.27	0.46	0.088	0.51	0.94

#### The Boron Content of the Leaves

In view of earlier findings that super-normal boron concentrations in irrigation water are associated with higher concentrations of boron in the leaves of citrus trees the plan of this experiment included the analysis each year of representative leaf samples from both the untreated trees and the boron-treated trees. The trees actually included in the experiment comprise 15 Eureka lemons, 20 Valencia oranges and 10 Navel oranges. These are set in rows, of 5 trees each, that run across the plot. Thus two trees of each row are untreated, two are fully treated with boron, and one gets treated water on one side and untreated water on the other. Each year, in February or March, a sample of mature leaves is collected from the same representative trees (one in each cross row) of each variety, one sample from the untreated trees and one sample from the boron-treated trees. The boron content of each leaf sample is shown in Table 35/38.

Table 35/38. The boron content of citrus leaves, C.S.S. from Boron-Tolerance Experiment, Plot "U," Rubidoux Laboratory, Riverside, California. The values are expressed as parts per million of the dry leaf material.

Date of Sample	Lemons		Valencia Oranges		Navel Oranges		Mean	Mean
	Un-treated	Boron treated	Un-treated	Boron treated	Un-treated	Boron treated	Un-treated	Boron treated
Feb. 1933	146	132	148	130	147	132	147	131
Feb. 1934	162	262	126	330	150	354	139	315
Feb. 1935	180	473	170	631	156	679	169	594
Feb. 1936	208	466	236	775	162	605	202	615
Mar. 1937	195	374	226	636	187	448	203	486

It may be observed by a comparison of the data of Table 35/38 with those for boron concentrations in Table 34/38 that there is a good correlation between the two. In respect to the lemons the use in 1933 and 1934 of water containing .75 and .85 p.p.m. of boron resulted in higher boron concentrations in the leaves in 1934 and 1935. The lower boron concentrations in the water in 1935 and 1936 was followed by less boron in the leaves, particularly in 1937. In the case of the oranges similar trends are shown. The slight increase shown in the boron content of the leaves from the untreated trees may not be significant but on the other hand the untreated trees from which the leaf samples were taken are large trees and they stand only 20 feet from the edge of the area that received boron-treated water. It seems possible that some of their roots might extend into that area.

#### The Yields of Fruit

In order to observe the relationship between the onset of boron injury and the productivity of the trees the fruit has been harvested separately from each tree. The lemon harvest has involved 4 or 5 pickings made during the winter and spring a year or more after flowering. The oranges have been harvested at one picking. The Valencias have been picked in July or August about 16 months after flowering and the Navels in December or January about 9 months after flowering.

In harvesting the lemons the fruit has been classified as to size, by measuring the smallest diameter, and as to color and the total yield has been weighed. The orange crops have been classified as to size, with notes as to proportions that were defective, green, and on the ground, and the total crop has been weighed. An examination of the notes as to size, color, and defective fruit indicates that the differences among the trees, in these respects, have not been influenced by the boron treatment, and these data are not included in the present report. The yield data, classified as to boron treatment, are reported in Table 36/38.



Table 36/38. The yield of fruit, in kilograms per tree, from the Boron-Tolerance Experiment, Plot "U," Rubidoux Laboratory, Riverside, California.

Trees	Eureka Lemons						Mean Yields
	1932-33	1933-34	1934-35	1935-36	1936-37		
Untreated trees (5)	57.3	95.3	68.1	70.2	25.0		63.2
Center trees (3)	108.8	147.4	120.3	146.6	63.0		117.2
Boron-treated trees (6)	104.7	129.5	121.8	92.7	43.1		98.4
Mean yield (14)	88.2	121.0	102.3	96.2	40.9		89.7
	Valencia Oranges						
Untreated trees (8)	132.4	84.2	83.4	58.1	62.5		84.1
Center trees (4)	167.5	116.6	101.2	84.1	81.5		110.2
Boron-treated trees (8)	181.9	134.4	62.1	61.6	70.2		100.0
Mean yield (20)	159.2	106.8	78.5	65.0	69.4		95.8
	Navel Oranges						
	1932	1933	1934	1935	1936	1937	
Untreated trees (4)	108.4	95.5	96.7	73.1	92.4	51.5	86.3
Center trees (2)	138.1	135.1	112.8	98.8	101.2	62.6	108.1
Boron-treated trees (4)	131.1	125.4	109.6	56.2	89.1	107.2	103.1
Mean yield (10)	123.4	115.4	105.1	71.5	92.8	76.0	97.4

It may be seen from this table that in mean yield, in kilograms per tree, for the period of record the three varieties have not differed greatly. These values are for the lemons 89.7, for the Valencias 95.8, and for the Navels 97.4. The mean annual yields for each variety have ranged between wider limits. It may be suggested that the low yield of lemons for 1936-37 may have been due in part to the cold winter through which the crop had no frost protection.

An inspection of data for the yields of fruit (Table 36/38) does not show clearly any effect of the boron treatment. These yield values may be expressed for each group each year as percentage of the mean annual yield of all the trees of each variety. This is done in Table 37/38. If the boron treatment had depressed the yields of fruit that fact should be shown by the data of this table. It seems evident that, as yet, there has been no such depression that may be ascribed to the boron treatment. The boron treatment has, apparently, caused an increase in the boron content of the leaves and produced the characteristic leaf symptoms of boron injury but the yield data do not show that there has been any effect, either injurious or beneficial, in the yields of fruit.

Table 37/38. The yield of fruit as percentage of the C.S.S. mean annual yield of each variety in the Boron-Tolerance Experiment, Plot "U," Rubidoux Laboratory, Riverside, California.

Trees	Eureka Lemons						Mean Percentage
	1932-33	1933-34	1934-35	1935-36	1936-37		
Untreated trees	65	79	67	73	61		69
Center trees	123	122	118	152	154		134
Boron-treated trees	119	107	119	97	105		109
	Valencia Oranges						
	1932	1933	1934	1935	1936	1937	
Untreated trees	83	79	106	89	90		89
Center trees	105	109	129	129	117		118
Boron-treated trees	114	111	79	95	101		101
	Navel Oranges						
	1932	1933	1934	1935	1936	1937	
Untreated trees	88	83	92	102	100	68	89
Center trees	112	117	107	138	109	82	111
Boron-treated trees	106	109	104	79	96	141	106



### Boron in the Soil

The plan of this experiment includes a program of sampling and analyzing the soil, the purpose of which is to obtain information as to what becomes of the boron applied in solution in the irrigation water. According to this program a set of soil samples was taken in February 1933 before the first boron-treated water was applied and a similar set of samples has been taken each February since then. A set of soil samples includes a composited sample to represent each of 3 soil horizons in each of 4 parts of the plot as follows:

Horizon A, the surface to 6 inches;  
" B, 6 inches to 36 inches;  
" C, 36 inches to 72 inches.

Part A represents untreated lemons;  
Part B represents boron-treated lemons;  
Part C represents untreated oranges;  
Part D represents boron-treated oranges.

Unfortunately at the time of writing this report the results of the analyses of these soil samples are not yet available.

Pending the completion of the analyses of these samples it may be permissible to include here a brief discussion of the subject. The possible destinations of the boron applied with the irrigation water may be enumerated as follows:

1. It may remain dissolved in the soil solution held in the 5 feet of soil here designated as the rootzone.
2. It may be absorbed by the soil to form insoluble compounds and thus be immobilized.
3. It may remain in solution and be leached into the subsoil below the rootzone.
4. It may be absorbed by the tree roots along with the soil solution taken up to support growth.

As a prelude to the interpretation of the results of the soil analyses when these become available the possible findings may be considered in respect to each of the 4 eventualities listed above.

1. If the boron remains in solution in the rootzone:

It has been estimated in a preceding paragraph that the volume of soil solution held by the block of soil allocated to each tree may range above and below a mean of 11,500 liters. In Table 31/38 it is shown that during the past 5 years 20.1 grams of boron has been applied to each tree of parts A and C of the plot, i.e., to the untreated lemons and oranges. Each tree of part B, the boron-treated lemons, has received 105.7 grams of boron and each tree of part D has received 213.5 grams. Thus if all the boron applied has remained in the soil solution of the rootzone the water soluble boron for each tree in part B should be 85.6 grams greater than in parts A and C while that in part D should be 193.4 grams greater. The concentration equivalent of 85.6 grams of boron in 11,500 liters of water is 7.44 parts per million while that of 193.4 grams is 17.58 parts per million. Consequently, in case (1) the boron concentration of the soil solution for the boron-treated lemons should be 7.44 p.p.m. greater and for the oranges 17.58 p.p.m. greater than for the corresponding untreated trees.

2. If the boron is immobilized in the soil:

It has been estimated above that the block of water-free soil allocated to each tree weighs 77,111 kilograms. If the boron applied through the irrigation sprinklers is destined to be wholly or largely immobilized in the soil it seems probable that this action would occur, at first, to a greater extent in the surface soil, and that it would progress downward slowly as the boron-absorbing capacity of the surface soil came into equilibrium with the boron concentration of the water applied. Thus if boron absorption by the soil is an active and effective phenomenon the soil samples representing the surface re inches of each part of the plot should show marked differences in their content of total insoluble boron. If all the boron applied to each part of the plot were absorbed by the surface or "A" horizon of the soil (7,711 kilograms per tree) the soil samples representing the boron-treated trees should contain 11.1 p.p.m. more for the lemons and 25.1 p.p.m. more for the oranges than the samples representing the untreated trees. Differences in boron content of the soil of this order of magnitude should be possible to determine with sufficient accuracy to indicate to what extent boron absorption by the soil has occurred in this experiment.

3. If the boron remains in solution and is leached into the subsoil below the rootzone:

It has been noted above that the findings as to soil moisture conditions in this experimental plot do not support the view that there is much, if any, cumulative downward movement of water into the subsoil below the 5th foot of soil. It



may be, however, that there is such movement. In that event some part of the boron applied may have passed below the zone of sampling. But if this downward movement of boron has been of large proportions then the soil samples of the "C" horizon (36 to 72 inches) should show concentrations of water-soluble boron equaling or exceeding those of the upper horizons because the soil samples have been taken in February each year when climatic conditions are most favorable to leaching. Furthermore, if this removal by leaching is an important feature of boron destination the samples of horizon C of the boron-treated areas for 1934 and 1935, following seasons of heaviest boron treatment, should show much larger quantities of water-soluble boron than the samples from the untreated areas or for the same areas in 1933.

4. If the boron is absorbed by the tree roots along with the soil solution:

Earlier findings in respect to the destination of the boron absorbed by the roots of citrus trees indicate that it is largely carried up to the leaves and deposited there. As the leaves mature they fall to the ground, become incorporated with the soil and decay. There is no basis for an acceptable estimate of the quantity of boron that may be absorbed annually by a full-grown citrus tree. But for present consideration such an estimate is not essential. It seems highly probable that whatever quantity of boron is so removed from the soil solution, the major portion of it must ultimately be returned to that solution after the leaves decay.

In view of these several possibilities as to the destination of the boron applied in this experiment it seems advisable to postpone further discussion of this subject until the results of the soil analyses become available.





W E E K L Y   R E P O R T S  
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No. 7

Belle Fourche

## April

The maximum temperature for the month of April was 89° on the 30th which is equal to the highest on record for 30 years; the minimum was 2°. The mean was 44° which is 1° below normal. The precipitation for the month was 1.53 inches, of which .80 was in the form of snow. Evaporation and wind movement were about normal.

The month was exceptionally favorable for all field work, and most of the small grain and a considerable acreage of beets were planted before the last rain on the 29th. All grains and pasture grasses at the station have been planted and all the ground prepared for planting corn, potatoes and sorghums.

During the month the W.P.A. laborers completed fencing the permanent and temporary tracts, and cleaning all the main irrigation ditches. Some of the steeper slopes of the ditches were sodded with Brome grass to prevent erosion.

About 11,000 acres have been signed up for sugar beets in the area which is a normal acreage for this district. Owing to favorable spring weather conditions, the planting is about two-thirds completed.

Mr. A. C. Hildreth of the Cheyenne Horticultural Field Station visited this station on the 27th in connection with the cooperative work with apples, plums and small fruits.

Beyer Aune

Huntley

The maximum temperature for the two-week period ending April 23 was 77° and the minimum, 19°. There was .18 of an inch of precipitation.

Conditions were favorable for field work during most of this period and good progress was made in the preparation of land and the seeding of crops. Beets were seeded in the irrigated rotations, and grain in the dry land plots.

An agreement was reached between the beet growers and processors and it is expected that an acreage of beets in excess of 25,000 acres will be grown in the Billings factory district. The contract does not provide a definite minimum payment. The amount to be paid will depend upon the selling price of sugar and sucrose content of the beets. At the present market price of sugar that amount would be \$7.87 per ton, including a benefit payment of \$2 per ton under the Agricultural Adjustment Act.

Dan Hansen

Newlands

The maximum temperature for the two-week period ending April 30 was 85° and the minimum was 32°. The mean temperature was 54.7°. The mean wind velocity was 5.08 miles per hour. There were 1.54 inches of precipitation during this period resulting in more precipitation than any other April month since 1915.

There has been some decline in farm prices. Butterfat is quoted at 26¢ per pound, eggs at 20<sup>1</sup>/<sub>2</sub>¢ per dozen, beef and pork at 8¢ per pound, and alfalfa hay at \$7 per ton.

Station activities consisted of hoeing weeds and replacing two or three irrigation structures. One irrigation was given the A and B series of plots. The W.P.A. project has continued. One ditch has been prepared for sodding and a few small structures prepared for painting; however, the unsettled weather conditions have made the other planned work impossible.

All the turkey poults have arrived and are confined to the brooder houses. The new Woods gas brooders are giving satisfactory results and are a decided improvement over the old ones.

E. W. Knight.

Prosser

The maximum temperature for the two-week period ending April 30 was 82°; minimum, 21°; monthly mean for April, 52.5°. The total precipitation for the month was 0.30 of an inch.

Station activities on the rotation plots included sugar beet cultivation, alfalfa irrigation, and routine hoeing and weeding. The sugar beets on plots 2, 3, and 4 in the Outlook Reclamation Project were thinned and hoed. The sweetclover on plots 1 and 6 were disked and plowed. Beets were planted on these plots April 29.

The majority of the asparagus cut in the Yakima Valley is being diverted to canneries. The price to growers is 5¢ per pound.

Station visitors during the period were Messrs. Lehman, Gibson and Jones of the Wireworm Laboratory, Walla Walla, Washington.

Carl A. Larson

Scotts Bluff

The maximum temperature for the two-week period ending April 30 was 90°; minimum, 32°; precipitation, .25 of an inch; and mean daily wind movement, 10.65 miles per hour.

Station activities included planting trees, corrugating grain, building fences, levelling ground, planting sugar beets in field E, and barley and alfalfa in field H. A six acre tract of barley and



Scotts Bluff, continued

sweetclover has been seeded in field B. Phosphate has been applied to field K and sugar beets have been seeded on the phosphated plots. The small grains and alfalfa are emerging on the rotation. An acre tract of old alfalfa where the stand is relatively thin has been seeded with barley. It is proposed to determine the value of this mixture as a pasture for dairy cows during the summer. Five hogs weighing 475 lbs. have been turned on alfalfa pasture in rotation 65.

An experiment with sugar beets has been started at the station to obtain information as to the extent yields will be influenced by obtaining a 100% stand. Yields and sucrose of sugar beets from a 100% stand planting will be compared with yields and sucrose from stands representative of those obtained commercially.

The chief activity in the valley is the planting of sugar beets and small grain crops. Providing climatic conditions are not unfavorable to the grasshopper, a large offensive against these pests will be necessary this year owing to the large number which survived the eradication program last year. A campaign is in progress against the pocket gopher on the station. To date, approximately 30 gophers have been trapped.

Dr. H. M. Tysdal, Forage Crops & Diseases, has been at the station planting wilt-resistant strains of alfalfa. Dr. A. C. Hildreth, Cheyenne Horticultural Station, was a visitor.

Lionel Harris.

Umatilla

The weather during the last half of April was generally favorable for crop growth and the season is further advanced than usual. The maximum temperature was 83° and the minimum, 33°. On the colder nights light frosts have occurred on the lower lands. The precipitation totaled .09 of an inch.

The Bureau of Agricultural Engineering Snow Survey, released April 11, indicates somewhat lower than normal snow remaining in the mountains of the Umatilla River watershed. The runoff, however, has been good, probably due to the early fall wetting of the range. The Cold Springs (Hermiston) and McKay Reservoirs have been filled, the latter for the third time during its eight years of use. Irrigation water has been used continuously for the past two weeks on the station.

With the exception of an acre of moving sand, all of the blow area west of the station proper has been stabilized with rye seeded last fall. The remaining portion was strawed and disked and has successfully withstood one hard windstorm, so it will likely be in shape to seed this fall.

Umatilla, continued

The variety tests of soybeans, corn and grain sorghums have been planted. An early planting of tomatoes started in the hotbed was made in the field on April 18 in an attempt to have the tomatoes large enough to withstand serious inroads of leafhoppers during the first migration, which is usually late in May or early June. All of the land for the curly top tests has been prepared for planting. Good stands of alfalfa and sweetclover were secured from the plantings made early in March.

H. K. Dean

YUMA

The maximum temperature for the two-week period ending April 30 was 102° and the minimum was 48°. There was no precipitation, and the wind velocity averaged 2.1 miles per hour. The nearly normal temperatures during the forepart of the period gave way to lower temperatures and an increased wind movement for the past 10 days. This weather condition has prolonged the unfavorable growing condition of the newly planted cotton crop on the project. Spotted stands, much weed growth and small cotton plants for this time of the season have resulted.

The second cutting of alfalfa hay on the project is now being harvested. Prices for baled hay FOB the farms are around \$9 per ton. Cantaloupe shipments expected to begin the end of April will be delayed on account of cool weather.

Station activities have consisted of digging and packing alfalfa plants in the wilt-resistant nurseries, cultivating cotton, harvesting wheat and barley, general irrigating, and hoeing.

Dr. John W. Carlson who has been at the station for the past 10 days completed his work on the alfalfa wilt nurseries and returned to his headquarters at Logan, Utah, on April 25. Approximately 200,000 plants were shipped to Madison, Wisconsin; Lincoln, Nebraska; Manhattan, Kansas, and Logan, Utah.

Messrs. Gerald Thorne and Clyde W. McBeth, Division of Nematology, Salt Lake City, visited the station and project April 26 to May 1st to inspect the local problems connected with decreased yields of winter grains. This preliminary investigation showed the presence of Pratylenelus pratensis on barley, alfalfa and cotton. Additional samples will be submitted to the Salt Lake City laboratory.

Other station visitors included Mr. R. E. Blair of the Bureau of Agricultural Economics, Sacramento, California, Messrs. A. T. Mitchelson, H. F. Blaney and D. C. Muckel, Division of Irrigation, Bureau of Agricultural Engineering.

E. G. Noble



W E E K L Y R E P O R T S  
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(Not for publication without the prior consent of this Division)

Vol. XL

May 1-14, 1938

No. 8

Huntley

The maximum temperature for the two-week period ending May 14 was 84° and the minimum was 23°. There was one inch of precipitation. The weather has continued cold and the crops are making only slow growth. Light showers were of slight benefit and irrigation was general for all spring seeded crops.

Beets were reseeded in the irrigated rotations, following the loss of stand by freezing during the week of May 7. On other station plots and fields seeded a week later than the rotations, the beets had not emerged, therefore, no damage occurred. Land was prepared for the seeding of barley and oats on the irrigated fields, as well as land preparation for late-seeded crops in the dry land. Old alfalfa fields were irrigated, and work was performed on the irrigation system in preparation for the irrigation of other crops.

Dr. Mitro Afanasiev, of the Botany Department, and Dr. Mills, of the Entomology Department, of the Montana State Station, visited the station in connection with cooperative work for the season. Messrs. O. W. Monson, Irrigation Engineer, and L. W. Reitz, of the Agronomy Department, of the Montana State College, visited the station.

Dan Hansen

Newlands

The maximum temperature for the two-week period ending May 14 was 87° and the minimum was 28°. There was .40 of an inch of precipitation.

Little change has occurred in farm prices. Most farm products are lower than a year ago, now being nearly on a level with the low prices of two years ago. Butterfat is selling for 26¢ which is the lowest price received for it during the past two and one-half years.

Station activities have included hoeing weeds, irrigating, and planting corn on plots C18 and C34. Plots B23, 26, 30 and 35 are being prepared for corn seeding. In addition, plots Y2, 3 and 4 have been plowed and are being reworked in preparation for a garden. Plantings have been made of 16 strains of sweetclover varieties that were received from the Division of Forage Crops and Diseases. These were small plantings made to determine the reaction of these strains when grown under our conditions with particular emphasis being placed on their tolerance to salinity.

E. W. Knight

Prosser

The maximum temperature for the two-week period ending May 14 was 80° and the minimum, 26°. The precipitation was .04 of an inch.

The reservoirs of the Reclamation Service are filled to capacity of more than one million acre feet of water. On May 14 there were 22 inches of snow on the ground of Snoqualmie Pass of the Cascade Mountains.

The sugar beets in the various rotations are being blocked and thinned. Those in plots 1 and 6 at the Outlook Reclamation project have emerged and an excellent stand was obtained. Plots 2, 3, and 4 were cultivated and corrugated. The sugar beets on plots 2 and 3, formerly in barley and sugar beets, respectively, are making excellent progress. The beets on plot 4 emerged with a good stand but on account of slow growth this plot has been irrigated twice.

Approximately an acre of new lawn has been prepared for seeding in the southeast corner of the station grounds. The horse barn has been changed to a portion of the dairy barn and the corrals moved further from the station buildings. The old root cellar has been dismantled and its location incorporated in an adjacent alfalfa field.

Other station activities included the pasturing of sweetclover rotations by sheep, started May 10; preparing the corn plots for seeding, and routine irrigation.

The prices for farm produce are as follows: Hay in the stack \$8.50 to \$11 per ton; U. S. #1 potatoes in sacks \$8 per ton; soft white wheat 65¢ per bushel; barley and oats, \$25 and \$26 per ton, respectively; hops, 14¢ per pound; large white eggs, 19¢ per dozen, and butterfat, 23¢ per pound.

C. A. Larson

Scotts Bluff

The maximum temperature for the two-week period ending May 14 was 84° and the minimum, 29°. There was .73 of an inch of precipitation. The precipitation for April of this year was 1.59 inches as compared with a 28-year mean of 1.78 inches.

Station activities included planting trees and shrubs, preparing ground for planting corn, installing cement irrigation checks with the help of the N. Y. A., and leveling ground for a contour irrigation experiment. Corn has been planted on the rotation plots and also for a corn hybrid test including 48 hybrids and 3 local varieties. Thirty-one hybrids and 3 local varieties have been included in a test involving 5 random replications of each variety, in order to obtain accurate information with respect to the yield, maturity and quality of each hybrid. Fourteen hybrid strains have been included in the test for observation to determine their general possibilities for this area. The hybrids which have been grown here in the past have been somewhat late in maturing.



Scotts Bluff, continued

Water has been turned into the laterals which serve the station and has been run on alfalfa and pasture crops since the twelfth. Sheep have been turned on sweetclover pasture in rotation 45 in field K, and in rotations 41, and 43 in field E.

Scottsbluff County's first consignment of 1937 agricultural conservation benefit checks arrived in the County during the week. \$93,538.83 will be paid to 845 farmers who have complied with the conservation requirements.

On May 3 the Acting Superintendent and Mr. Rogers visited the Cheyenne Horticultural Station in the interest of the cooperative work between that station and the Scottsbluff station in testing trees and shrubs. A truckload of trees and shrubs were brought back for planting tests.

Mr. M. R. Lewis, Agricultural Engineer from Corvallis, Oregon, visited the station during this period.

Lionel Harris

Umatilla

During the two-week period ending May 15 the maximum temperature was 82° and the minimum, 36°; the mean temperature was 58°. The wind velocity was 4.9 miles per hour; precipitation, .52 of an inch.

The principal work consisted of assisting Dr. B. F. Dana, Division of Fruit and Vegetable Crops and Diseases, in making the curly-top plantings for the year. The tests under way include strains and varieties as follow: Tomato, 133; beans, 1,029; squash, 145; and beets, 17. The tomatoes are chiefly selections from previous years showing tendency to resistance, although included are 80 strains from South America. Approximately 100 additional South American strains will be planted later. The beans are entirely crosses and progeny of crosses from past selections. A number of these crosses between resistant field beans and snap beans show sufficient promise in resistance and snap bean quality to be released after this year's selection. Most of the squash under trial are the result of selfing the Umatilla strain of Marblehead, although a considerable number are foreign introductions. The beets are all progeny of resistant sugar beets X Detroit Dark Red table beet, which carries considerable resistance to curly-top. A total of over 1,300 strains are under test.

The leafhoppers have appeared in large numbers in the test plots during the past week. Some of the standard varieties of tomatoes planted early in an attempt to have the plants sufficiently large to resist curly-top when the hoppers migrated, are showing the disease.

Umatilla, continued

Real interest is being shown this season in the experimental ornamental plantings on the station grounds. A majority of the visitors inspecting the plantings are town people. Approximately 40 Plant Importation releases were added to the collection this year.

H. K. Dean

Yuma

The maximum temperature for the two-week period ending May 14 was 105°; mean maximum, 90.7°; minimum, 46°; mean minimum, 52.4°. There was no precipitation recorded.

Although wind movement and low humidities have dried out the land rapidly, crops in general have made a rapid growth. Cotton stands are below par but the crop has made a satisfactory growth. Grains have ripened rapidly and barley and wheat are now being threshed on all sections of the project.

An extra cutting of alfalfa hay is being made on many farms as the price of hay baled, F.O.B. farms, has advanced to \$11 per ton. This extra cutting will make the alfalfa seed crop late in such instances.

For the month of April the U. S. Geological Survey report on the Colorado River shows the discharge at Grand Canyon to be 1,550,000 acre feet. The discharge from Lake Mead was 558,000, leaving 16,440,000 acre feet in storage behind Boulder Dam.

Station activities included the cultivation of cotton, planting grass nurseries, threshing wheat and barley plats, harvesting the third cutting of alfalfa hay, general irrigating, and hoeing.

Dr. W. H. Chandler, Assistant Dean of the California College of Agriculture, and Dr. L. D. Batchelor, Director of the California Citrus Experiment Station visited the station and project on the 4th and 5th. Mr. Scofield visited the station from the 4th to the 7th.

E. G. Noble.



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May 15-28, 1938

No. 9

Belle Fourche

May

The maximum temperature for the month of May was 86° and the minimum was 25° occurring on the 6th. The last killing frost occurred on the 8th when the temperature went to 28°. Precipitation for the month was 2.92 inches which is approximately normal. The rainfall was well distributed with the result that all crops came up with a good stand. The heaviest rainfall occurred during the period May 28-31 when 1.23 inches were recorded.

Irrigation water was turned into the canals on the 14th and all alfalfa, pastures, trees and lawns were irrigated. The cultivation of beets was started on the 25th, and thinning beets began on the better plots the latter part of the month. Other work consisted of preparing land for the planting of corn, potatoes and sorghums, cleaning up field alleys, roads and irrigation ditches.

The sheep were sheared on May 23. The average weight of the fleeces was 7.6 pounds which is somewhat lighter than in the years past. There has been no general sale of wool in this territory. Offers of 15¢ to 18¢ have been made for small clips, but so far very little has been sold. The station clip probably will be consigned to the National Wool Pool.

At this time there are some 110,000 acre feet of water stored in the Belle Fourche Reservoir, which will be sufficient for all crops during this irrigation season.

All crops are in excellent growing condition for this time of year. The one probable drawback is the grasshoppers, which in some localities have done considerable damage to late planted sugar beets. A campaign of poisoning is under way on the project. How effective this will be remains to be determined.

Beyer Aune.

Huntley

The maximum temperature during the three-week period ending June 4 was 88° and the minimum 30°. There were 2.99 inches of precipitation. A rainfall of 2.74 inches which fell during the week of May 21 was of much benefit to all crops and should insure good stands without further need of irrigation. The rainfall was general over the State, and in the mountain section occurred in the form of snow. The amount of snow that fell in the higher sections was reported to be from 2 to 4 feet in depth. Prospects for crops on dry lands are much better than for several years past.

Huntley, cont'd

A heavy migration of Mormon crickets from the Pryor region south of Huntley has started, but it is hoped to prevent their entering the Huntley Project by the use of metal barriers and by applying oil to the canal at the intake. The use of oil on the canal appears to be the most effective method so far found of stopping the migration, and large numbers of crickets are being destroyed by this method.

Station work during this period included the preparation of land and seeding of beans, corn, potatoes and other late crops, and the construction of irrigation ditches. All planting operations were completed.

Station visitors included Dr. H. A. Mills and Mr. Pletsch of the Entomology Department; Dr. Edwin J. Wellhausen of the Agronomy Department and Prof. Morris and Dr. M. M. Afanasiev of the Botany and Biology Department of the Montana State Experiment Station, who were here in connection with seeding crops in the cooperative experiments.

Dan Hansen

Newlands

The maximum temperature for the two-week period ending May 28 was  $87^{\circ}$  and the minimum was  $35^{\circ}$ , with a mean of  $58.2^{\circ}$ . There was .44 of an inch of precipitation.

The cool weather has favored a rapid spread of aphids about the project. Many alfalfa fields have a yellow appearance with little possibility of a satisfactory first crop. In addition to aphids trouble several farmers have reported a loss of entire stands of last fall's seeding. The cause of these losses is not definitely known, but some suspicion exists that it might have been due to alfalfa seed obtained from southern localities.

Work at the station consisted of cultivating corn and replanting those areas damaged by pheasants, hoeing weeds, and planting garden. The W.P.A. relief project has continued. Some pasture fences have been built, concrete walks and feeding floors constructed, buildings painted, and in addition a small barn is being constructed.

Some trouble is being experienced with the turkey poults. To date there has occurred a 7% loss. One of the greatest loss factors has been gnats. The cool weather has appeared to be favorable for this pest. Reports from about the project show losses to be fairly general, not only with turkey poults but with chickens.

The pig experiments were started last week. This year 12 pigs will be individually fed and 16 will be group fed. A comparison of pure-bred with first crosses will be conducted.

Doctors McCall and Salmon of the U. S. Division of Cereal Crops and Diseases, and Director S. B. Doten of the State Station, were visitors during this period. The object of the visit was to acquaint



Newlands, cont'd

themselves with the White Top problem and make arrangements for the possibility of some investigational work. Later Dr. Salmon returned accompanied by Dr. Rosenfels. The latter will have charge of any investigational work undertaken on this project. Such work will be in cooperation with the State Station, using the Newlands Field Station as headquarters.

E. W. Knight.

Prosser

The maximum temperature for the two-week period ending May 28 was 94 and the minimum was 36. There was no precipitation.

Station activities included planting corn on the rotation plots, disking alfalfa and sweetclover plots for potatoes. Thinning of the sugar beet plots was finished and the first irrigation applied. The sugar beets on plots 1 and 6 on the Outlook Reclamation Project were blocked and thinned. New lawn was seeded in the southeast corner of the station grounds. The garage and horse corral that were adjoining this area have been moved.

The first cutting of alfalfa hay has begun at the Station and haying operations are quite general in the lower Yakima Valley. The first hay crop is badly infested with cheat grass this year.

For the purpose of studying irrigation structures, Arthur Jaquot, Instructor in Agricultural Engineering, Washington State College, Pullman, Washington, visited the Station with a class of 10 students on May 23.

Carl A. Larson

Scotts Bluff

The maximum temperature for the 3-week period ending June 4 was 91° and the minimum was 41°. There were 2.57 inches of precipitation.

On June 4 the storage in the Pathfinder Reservoir amounted to 635,800 acre feet. Inflow into the reservoir was 7,951 sec. ft. Maximum storage in the Pathfinder Reservoir this year is expected to reach 800,000 acre feet. During the past few years the maximum storage has been approximately 600,000 acre feet. Precipitation during May totaled 3.16 inches as compared with the 29-year mean of 2.60 inches. The total precipitation from Jan. to May, inclusive, has been 1.1 inches higher than the 29-year mean for the same period. On May 27 the Alcova Reservoir held 117,600 acre feet of water and the Guernsey Reservoir, 53,090 acre feet. Lake Minstare, east of the station, is carrying almost its maximum capacity of water.

May 15-28, 1938

Weekly Reports

M I S C E L L A N E O U S

Mr. Scofield returned to Washington from Riverside, Calif., on May 17.

Memorandum for Field Men

All papers submitted to the Washington Office for presentation or publication must be forwarded in triplicate (1 ribbon copy and 2 carbons); the original is sent to the Secretary's Office, one carbon to the Bureau Publications office, and one carbon retained in the Division files.

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Scotts Bluff, cont'd

Generous rains occurred over the North Platte Valley during the week of May 21. Precipitation ranged from 1.5 to 2.5 inches. The rain fell in heavy showers resulting in erosion and flooding from the steeper plowed slopes. Corn and beets planted on slopes were washed out in some cases, and on the level land adjacent to steep slopes these crops were buried beneath the sediment carried down by the heavy streams of water. On the south side of the river, considerable damage was done to alfalfa and small grain crops. The first cutting of alfalfa was damaged extensively. Damage occurred to the beet crop also, but as beets have not been thinned, a fast recovery is expected.

Dr. J. H. Jensen and Mr. W. E. Deacon of the Pathology Department, Univ. of Nebraska, have been at the station planting strains of potatoes and beans to determine their disease resistance. The strains of potatoes are being studied for their resistance to fusarium wilt and scab, and the beans for their resistance to bacterial blight. Dr. Jensen will have his headquarters at the station during the summer.

Station activities included plowing corn ground, alfalfa plats for potatoes, thinning and cultivating beets, planting beans on the rotation plots, irrigating alfalfa, pouring cement for irrigation checks, cleaning irrigation ditches, planting variety tests of sweet corn, forage and grain sorghums and early potatoes. The sweet corn test includes the more promising hybrids and includes 6 random replications of approximately 50 varieties. The sorghum variety test includes 5 random replications of 9 varieties.

A great number of grasshoppers have hatched in the Valley and the poisoning campaign against them is getting under way.

Laboratory equipment belonging to the Plant Pathological Department of the Univ. of Nebraska, has been brought to the station from Alliance, and is being utilized to equip a laboratory for making detailed studies of plant diseases as they occur in the field in the North Platte Valley.

Lionel Harris

Umatilla

During the week ending May 22 the maximum temperature was 95°, the minimum, 47°, the mean, 72°, mean wind velocity, 2.8 miles per hour, daily evaporation, .232 of an inch, precipitation, .38 of an inch.

The first cutting of alfalfa is being made on the surrounding projects. The hay is very foul with downy brome grass this year, due to mild moist growing conditions during the winter and spring. The routine station work consisted of irrigating and weeding.

Umatilla, cont'd

Official visitors were H. L. Westover, H. A. Schoth and D. C. Smith of the Division of Forage Crops and Diseases. During the course of their conference a trip was made to a wilt-resistant alfalfa planting made in 1934 on the meadows near Stanfield for which Mr. Westover furnished seed. The strains included Turkestan, F.C.19302; Ladak, F.C.22110; and Hardistan, F.C.22104. The farmer's field adjoining was seeded with commercial Grimm. The three introduced strains still have good stands, but the Grimm was badly depleted. Mr. Westover stated that wilt did not appear to be as severe here as in some localities.

H. K. Dean.

Yuma

The maximum temperature for the two-week period ending May 28 was 106°, minimum, 52°, precipitation, 0.

For the month of May the mean temperature was 1.2° above normal but .4° cooler than May 1937. All project crops have made good growth. Cotton particularly presents a much better appearance in the fields than predictions warranted a month ago. Chopping and hoeing of the crop have been completed and in most cases the second irrigation has been applied.

The prospective alfalfa seed crop is now in bloom. Damage to this crop, particularly by Lygus spp. is reported in the irrigated areas along the Gila River east of the project. A power duster using sulphur and paris green is being used on a few of the larger farms to control this particular insect. The infestation in the Bard area, according to inspections by field representatives of the Bureau of Entomology and Plant Quarantine, is reported to be light.

Cantaloupe and watermelon shipments from the project have begun. Shipments from Imperial Valley have been going forward for about 3 weeks. The prices are reported to be fair.

Station activities included the chopping and hoeing of all cotton plats, cultivating cotton, threshing barley varieties, installing excelsior cooler box in the office, repairing office wiring system, and general hoeing and irrigating.

The U. S. Geological Survey report on the Colorado River for the month of May shows the discharge of the river at Grand Canyon to be 3,328,000 acre feet. The discharge at Parker, below Boulder Dam, was 532,000 acre feet, leaving an estimated net storage in Lake Mead of 18,850,000 acre feet.

Station visitors were Mr. P. V. Cardon, Division of Forage Crops & Diseases, and Mr. Roy Nixon, Division of Fruit and Vegetable Crops and Diseases.

E. G. Noble.



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No. 10

Huntley

The maximum temperature during the week ending June 11 was 90° and the minimum was 31°. There was a trace of precipitation. Following several days of unseasonably cool weather a light frost occurred on June 10. This is the latest spring frost date in the history of the station. Only slight damage occurred in a few sections to tender truck crops and field beans.

Thinning of sugar beets is well advanced in most sections of the Valley, although, due to recent cool and dry weather, the crop is making but slow growth.

At the station work included thinning of beets, irrigation of alfalfa and grains, and also irrigation before thinning of beets that were replanted in the rotation plots.

Dr. M. M. Afanasiev, of the Montana Agricultural Experiment Station, was at the station the latter part of the week in connection with cooperative work.

Dan Hansen

Newlands

The maximum temperature for the two-week period ending June 11 was 90° and the minimum was 43°, with a mean temperature of 65.8°. There was .41 of an inch of precipitation.

Owing to the aphids infestation and to a heavy crop of pepper grass, foxtail, and broncho grass, the yield of first crop hay will be from 50% to 60% normal. At the present time some damage is being done by weevils and cutworms. Further damage to the second crop is evidenced by the presence of numerous small grasshoppers.

Work at the station consisted of hoeing weeds, cultivating corn, cleaning ditches, irrigating, and hauling manure. Some 800 feet of ditches have been sodded, and concrete has been poured for the foundation of a new barn. There have been installed 320 rods of electric fencing on the "A" series of plots.

The loss of turkey poults, which is general over the project, continues. Some 16% have died from causes that are rather complex. Examination of the dead birds shows no diseased condition, except a few lesions similar to those caused by venom poisoning. The presence of a great many gnats and their annoyance to the poults offers one solution.

E. W. Knight.

Prosser

The maximum temperature for the two-week period ending June 11 was 93°, minimum, 35°, rainfall, 0.15 of an inch.

Station activities included harvesting alfalfa hay on the rotation plots and preparing potato plots for planting.

The Fruit and Vegetable Products Laboratory and Frozen Pack Laboratory of the Bureau of Chemistry and Soils have started the season's work on processing fruits and vegetables at the station. Mr. A. M. Neubert and Jack Siegel have arrived from Pullman to conduct the investigation. Strawberries and peas have been processed to date. Mr. Len Wooton, Research Assistant in Horticulture also came to the station to assist with the horticulture program.

Mr. J. R. Douglass of the Bureau of Entomology at Twin Falls, Idaho, visited the station during a survey of beet leafhoppers in the Yakima Valley. Hopper counts showed that there were 28 hoppers per beet on the average at the station. The highest average count found in the surrounding districts was 15 beet leafhoppers per beet.

Visitors included Dr. S. M. Dietz, Acting Head, Dept. of Plant Pathology, and Mr. Johnson, graduate student, State College of Washington, Pullman.

Carl A. Larson

Scotts Bluff

The maximum temperature for the two-week period ending June 18 was 90° and the minimum was 43°. There was .30 of an inch of precipitation. An unusually heavy windstorm swept over the valley from the south on the 18th. Some damage to sugar beet and bean crops on the very sandy soils occurred as a result of the wind.

Station activities during this period included cultivating corn and sugar beets, irrigating small grain, and cutting and raking alfalfa hay. All of the sugar beets at the station have been thinned. Over the Valley as a whole, from 80% to 90% of the crop has been thinned. The sugar beet webworm is causing damage to the crop in localized areas, and a spraying program against this pest is in progress.

Potatoes have been planted on all of the rotation plots, and on part of the ground devoted to growing certified seed potatoes. At the present time the early crop in the North Platte Valley is threatened with extensive damage by the psyllid insect, which transmits the virus disease commonly known as "purple top" of potatoes. Psyllids are unusually abundant on all early planted potatoes. In view of the presence of numerous psyllids, the late crop is endangered. An extensive spraying program is expected to be launched against the insect. Satisfactory results in connection with controlling the insect in past years have been obtained by spraying with 1 gallon of liquid lime sulphur and 2 lbs of zinc arsenite to 40 gallons of water.



Scotts Bluff, continued

Dr. H. O. Werner, Horticulturist of the Univ. of Nebraska, has been at the station supervising the planting of potato, tomato, and sweet corn experiments. Dr. H. M. Tysdal visited the station during this period.

The construction of a small addition to the soil house has been completed in order to furnish additional room, and particularly to house the soil ovens. The house on the Walker place, and the beet-tender's cottage have been painted and shingled.

The 49th Annual Convention of the Nebraska Stock Growers Assn. was held at Scottsbluff Thursday, Friday, and Saturday. The session included among other things, detailed discussions of the major problems confronting the stock grower in producing and marketing his cattle. Efforts were made to organize a campaign against cattle rustlers who have been slaughtering animals on the range and hauling the dressed carcasses to market. The reciprocal trade treaties received attention also. Speakers included Governor R. L. Cochran, Representative Harry B. Coffee of Chadron, Fred E. Waring of Cheyenne, E. E. Mollin of Denver, R. C. Pollock of Chicago, S. R. McKelvie of Lincoln, Bruce McCullough and Prof. H. J. Gramlich of the University of Nebraska.

Lionel Harris

Umatilla

During the two-week period ending June 12 the maximum temperature was 96°, minimum, 39°, mean, 68°. The mean wind velocity was 5.45 miles per hour. There was .56 of an inch of precipitation. The .43 of an inch of precipitation that fell June 17-18 was the highest daily June rainfall since 1920, and the rain is continuing.

The major work during the period was putting up the first crop of hay which has yielded above the average. Miscellaneous work consisted of weeding and fence repairing. A fire guard was disked around the desert area west of the station with a double guard around the rye planting.

Dr. B. F. Dana spent several days at the Station making stand counts of his plantings and preliminary records of curly top infection. The leafhopper vector is more numerous than for a number of years with the result that many of the varieties of beans are already going down. The early plantings of tomatoes is showing damage.

The decreasing flow of water in the river made it necessary to close the feed canal gates so station water is now being pumped from the "A" canal.

H. K. Dean

Yuma

The maximum temperature for the two-week period ending June 11 was 111°, minimum 57°, precipitation, 0. Temperatures somewhat above normal prevailed during most of this period.

Cantaloupe shipments rapidly increased to the point where the newly established pro-rate agreement was to take effect. At the present time only the large sizes and larger packs are being shipped from the Imperial and Yuma Valleys.

Some late cuttings of alfalfa hay are going to market at \$10 and \$10.50 at the ranches. Almost all of the second and older stands have been turned to seed--the present hay crop coming from either first year old alfalfa or from stands damaged for seed by insects. The Tarnished Plant bug, Lygus Spp., is present in large numbers in some of the fields. Dusting alfalfa fields in the Roll section continues on an experimental basis.

Dr. H. G. Johnson, John Breazeale and Dean Asquith of the Division of Cotton Insects, Bureau of Entomology and Plant Quarantine, arrived at the station to take up their cooperative work in the control of cotton insects. Dusting and cage studies will be conducted at the station along the same general lines as followed in 1937. Field tests with various insecticides will be continued in cotton fields in the vicinity of Somerton, Arizona. Mr. T. P. Cassidy of the Division of Cotton Insects with headquarters at Tucson, Arizona, is in charge of this cooperative work and visited the station June 2 and 3. Mr. M. A. Hein of the Division of Forage Crops and Diseases visited the station May 3 & 4 to inspect the cooperative grass nurseries.

Station work included the threshing of barley varieties, harvesting the fourth alfalfa hay crop, hoeing and chopping cotton, repairing ditches and buildings, and general irrigating and hoeing.

E. G. Noble

M I S C E L L A N E O U S

A publication entitled "The Value of a Ton of Farm Manure in the North Platte Valley," by Lionel Harris, has been issued by the University of Nebraska College of Agriculture as Bulletin 318, May 1938.



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Huntley

The maximum temperature for the two weeks ending July 2 was 93°; minimum, 51°; precipitation, 3.35 inches. The total June rainfall amounted to 3.35 inches as compared to the normal of 2.11 inches. Rains were general over the State and while no damage occurred locally, sections in the eastern and southern parts of the State reported rather serious damage from floods, and in some localities hail caused severe injury.

The first cutting alfalfa was damaged by the rains and the hay was of poor quality. Other crops are making good growth and no irrigation has been necessary. The thinning of beets has been completed in most sections and the crop generally is in good condition.

A heavy migration of Mormon Crickets occurred during this period, and dry land crops adjacent to the project on the south are being damaged to some extent. The construction of metal barriers and traps and the use of oil on the main Huntley canal have so far prevented the spread of crickets over irrigated lands on the project.

Station visitors included Dr. Afanasiev, Mr. Pletsch, Mr. Forsyth, Mr. Linfield, Professor A. H. Post and Mr. O. V. Monson of the Montana State Experiment Station.

Dan Hansen.

Belle Fourche

June

The maximum temperature for the month was 97°; minimum, 37°; precipitation, .92 of an inch. The average precipitation for June is 2.56 inches. There were no beneficial rains to crops; the largest amount recorded on any one day was .38 of an inch on the 23d. The evaporation was above normal and strong warm winds occurred frequently during the heat of the day which were particularly injurious to the small grains on the dry land.

Insect pests such as grasshoppers, striped beetles and crickets have been particularly injurious to crops on some parts of the farm. Poison bait, spraying with Paris Green and dusting with a mixture of hydrated lime and Paris Green have been used, but with very little beneficial results so far as killing the various pests and saving the crop.

All sugar beets were thinned, hoed and irrigated once. Small grains and alfalfa were irrigated twice. The harvest of alfalfa was completed during the month. The average yield per acre in the irrigated rotations was .96 ton per acre; maximum yield,

Beile Fourche, continued

2.20 tons per acre in rotation 8b, continuously manured; and the minimum yield, .29 of a ton in rotation #71.

Mr. D. A. Spencer, Bureau of Animal Industry, Washington, D.C., visited the station on June 16-17; and Joe Hale, Bureau of Agricultural Economics, Sioux City, on June 19.

Beyer Aune.

Newlands

The maximum temperature for the two-week period ending June 25 was 92°; minimum, 36°; precipitation, .77 of an inch.

The greater part of the first crop hay on the project has been cut. The indications are for a crop of about 70% of normal. Some damage occurred to the hay in the shocks from numerous showers, and almost all of it is of poor quality, due to weeds.

Other station activities consisted of cultivating corn and hoeing weeds. The W.P.A. project continues with additional pasture fencing, painting, repairing and constructing a small barn. The pasture fencing was the planned pastures on the "A" series. Some 300 rods of electric fence have been placed. The cows placed on pasture quickly learned about the electrically-charged wire and have reacted favorably.

Much interest is being taken in the proposed weed investigation of the U. S. Cereal office. Plans have been outlined and the work should start within the near future. Several meetings have been called by various farm and district organizations from which it is hoped a plan will evolve that will result in some sort of a weed eradication program functioning through an organized weed district. Little can be accomplished in the eradication this year, but it is hoped that all details can be arranged so that concerted action may be taken early next spring.

Station visitors were Mr. S. H. Mitchell, Field Supervisor of the U. S. Bureau of Reclamation; Mr. George Snow, in charge of C.C.C. activities for the Reclamation Bureau; Mr. Stanley Marean of the same office; and Mr. W. H. Wallace, Manager of the local irrigation district.

E. W. Knight.

Prosser

The maximum temperature for the two weeks ending June 25 was 91°; minimum, 44°. The rainfall amounted to 1.64 inches, of which 1.15 inches fell in 24 hours. During a thunder shower on June 22, 0.43 inch fell in about one-half hour.

Station activities included potato planting on the rotation plots and routine irrigation and cultivation. The office building at the station is being painted white. Several other station



Prosser, continued

buildings also will be painted.

Mr. Jaquith, graduate student in Horticulture at Pullman, Wash., arrived at the station to conduct CO<sub>2</sub>-assimilation studies in the station apple orchard. Station visitors were: Prof. O. M. Morris, and Dr. E. L. Overholser, Dept. of Horticulture, State College of Washington, Pullman; J. E. Britton, horticulturist, Summerland Experiment Station, Summerland, British Columbia; and Messrs. Gibson and Lehmen, Wireworm Laboratory, Walla Walla, Washington.

C. A. Larson

Scotts Bluff

The maximum temperature for the two-week period ending July 2 was 95°; minimum, 50°; precipitation 1.94 inches. The total precipitation for June amounted to 2.35 inches as compared with the 29-year mean of 2.20 inches.

Owing to copious rains during the week, the demand for irrigation water was light. Precipitation ranging from .15 to .56 of an inch was recorded every day during the week. A large proportion of the first cutting of alfalfa in the valley and part of the first cutting at the station were damaged rather severely as a result of the daily rainfall. Most of the hay was ready to stack when the rains began.

Station activities included planting potatoes, hauling hay, cultivating corn, cleaning irrigation ditches, and cultivating and ditching sugar beets in preparation for irrigation. The second irrigation is being applied to the alfalfa crop. Corn, sugar beets, and alfalfa made rapid growth; potatoes and beans have emerged and are making satisfactory progress. Despite extensive efforts exerted to control grasshoppers in the valley, a great many are still alive and damaging crops to some extent. The roofs of the station buildings are being stained and the office building is being resingled.

A group of students from the Agricultural College at Ames, Iowa, visited the station Friday. Other visitors were: Dr. E. A. Hollowell; Mr. Carl Manke, who is working with clovers at the Univ. of Nebraska; Mr. L. L. Davis of the Biggs Rice Investigation Station, California; Mr. Atkinson, a plant breeder of the New South Wales Experiment Station, Australia; and Mr. L. A. Clark who has been taking care of the alfalfa breeding work at the station for the past two years and will continue his activities again this season.

Lionel Harris

Yuma

The maximum temperature for the two-week period ending July 2 was 108°; minimum, 52°; wind movement, 1.7 m.p.h. There was no precipitation. For the month of June the mean temperature was 0.5° above normal and slightly cooler than June 1937. The minimum temperatures during the latter part of the month were noticeably cooler than normal.

Early planted cotton on the project is fruiting in good shape, whereas the late plantings are showing excessive vegetative growth and much insect damage. The cotton variety test on the station indicates that all varieties except the two Stoneville strains will set a very light bottom crop.

Cantaloupe shipments following the plow-up program of a third of the crop, have been somewhat reduced over early June car loadings. Prices are holding around \$1.50 per crate.

Alfalfa seed indications are reported to be slightly unfavorable in the Yuma Valley section on account of stripping of the bloom. Insect damage is suspected as the contributing cause of this condition.

The U. S. Geological Survey report on the Colorado River for the month of June shows the inflow into Lake Mead as gaged at Grand Canyon to be 4,722,000 acre feet. Last June it was 2,400,000 acre feet. The discharge of the river below Boulder Dam for June 1930 was 555,000, leaving an estimated storage of 22,275,000 acre feet.

Station work included the plowing and leveling of grain stubble plots, cultivating cotton, cutting eucalyptus trees along the south side of the farm, and general irrigating and hoeing.

E. G. Noble.



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June 26 to July 16, 1938

No. 12

Huntley

The maximum temperature for the two-week period ending July 16 was 94°, minimum, 48°. There was .80 of an inch precipitation. Favorable weather conditions prevailed during this period and most crops are making good growth. An invasion of psyllid on potatoes is occurring in local sections and growers are preparing to use the lime-sulphur spray method of control.

The Mormon cricket situation appears to be well under control locally, although in the dry land areas to the South of the Project the crickets are damaging grains.

Mr. S. H. Hastings visited the station during the week of July 11, and was accompanied to the Montana State Station at Bozeman by the Superintendent. Other visitors included Dr. Afanasiev and Messrs. Pletsch and Forsyth of the Montana State Station.

The annual Huntley Project picnic was held on July 16 in the Project Park adjacent to the experiment station, with an estimated attendance of 1,500 people.

Station work included cultivation and hoeing of row crops and irrigation of alfalfa and cultivated crops.

Dan Hansen

Newlands

The maximum temperature for the two-week period ending July 9 was 91° with a minimum of 36°. The average wind velocity was 2.72 miles per hour. The weather has continued cooler than normal with higher precipitation than usual. Such conditions have resulted in smaller yields of hay, and the storms have interfered greatly with haying operations. There will be very little high grade first crop alfalfa available on the project this year.

Farm prices remain unchanged. Butterfat is selling for 26-1/2¢ per lb.; eggs, 25¢ per doz.; beef, 7-1/2¢ per lb.; pork, 9¢; and lamb, 7¢. The hay market is at a standstill with few sales being made. As the quality available is not good enough for meal purposes, that market is closed temporarily.

Work at the station consisted of one general irrigation, hoeing weeds, cultivating corn, and stacking and grinding first crop hay. Several jobs have been completed by the W.P.A. The barn is finished with the exception of a little carpentry and the second coat of paint.

Newlands, continued

White Top comprises the greater part of the weed problem. An effort is being made to have C.C.C. enrollees undertake the eradication of noxious weeds on a larger scale than heretofore. To date, the investigation by the U.S. Department of Agriculture is still in the formative stage. The men detailed to this project are awaiting definite orders to commence the work.

Station visitors were Mr. F.B. Headley of the State station staff, and Mr. L.R. Cline of the Extension Service.

E. W. Knight

Scotts Bluff

The maximum temperature for the two weeks ending July 16 was 96° and the minimum, 50°. The daily wind movement was 5.85 miles per hour. There were 1.51 inches of precipitation.

Station activities included irrigating the small grains for the second time this season, corn, barley, and sweetclover pasture; cultivating potatoes and corn; and cutting and shocking oats. The first irrigation to the sugar beet plats in the rotations was applied during the week. Owing to abundant spring rainfall, only two irrigations were necessary on the small grains this year. The Brunner variety of oats, which was planted on the dry land this year, has been cut and shocked. This variety is very early maturing and in some years on the dry land escapes the drought. The work of shingling and staining the roofs of the station buildings has continued. An insulated room has been built in one corner of the machine shed to house a refrigerator for cooling dairy products.

Sugar beets, potatoes, beans, and corn are making very good growth at this time. Bacterial blight of beans has become prevalent in a few fields of bush beans, planted for the cannery. However, the disease has not yet attacked the Great Northern field beans. The small grain crops have not suffered from drought or rust this year, and the grains being harvested in the Valley at this time are returning excellent yields. On the heavier soils considerable lodging has occurred in the barley crop.

Grasshoppers have been migrating for the past two weeks. They are now generally distributed over the valley, and are especially thick in small grain and alfalfa crops. Considerable poison bait is being spread. In some instances the bait proves to be effective, but in others the results are very unsatisfactory. Not all of the farmers are convinced of the utility or value of the bait or know how to use it to get the most effective results. On some fields turkeys are being utilized to control grasshoppers.

The Kearney Irrigation District, which holds the oldest priority on the Platte River, has brought suit against the State in an attempt to force it to deliver 22 second feet of water as prescribed in the priority to their headgates. It has been proposed



Scotts Bluff, continued

that the irrigators in the North Platte Valley either buy out the Kearney District land or build pumps for the Kearney District irrigators.

Station visitors included Dr. F.D. Keim and party from the Univ. of Nebraska, and Dr. H.O. Werner who visited the station in the interest of his experimental projects.

## Summary of Yields of First Cutting of Alfalfa, Field "K".

	Total Yields	
	Pounds per Plat	Tons per Acre
Maximum	1,030	2.06
Minimum	417	0.99
Mean	729	1.46

Lionel Harris

Umatilla

During the 2-week period ending July 9 the maximum temperature was 100°; minimum, 53°; average wind velocity, 5.1 miles per hour, precipitation, .13 of an inch.

The poultts from the earlier hatches were put on alfalfa range on June 28. The trap-nesting period for the turkey hens which were carried over for the establishment of breeding flocks was completed on June 30. From March 5 to June 30 the 44 hens averaged 71.6 eggs each, while the highest producing hen laid 89 eggs and the lowest, 33.

Routine work consisted of repairing the irrigation structure, irrigating, weeding, and cultivating.

Growing conditions have been unusually favorable this year. Many of the trees and shrubs in the landscape plantings have made more growth already than they did during the entire season last year. The first crop of alfalfa was the largest yet harvested on the station, and the second promises to be exceptionally heavy.

Official visitors were R.S. Besse, vice-director, and G.R. Hyslop, agronomist, Oregon Experiment Station; R.W. Morse, extension dairyman, Oregon Extension Service; and H.W. Mitchell, Bureau of Reclamation.

H. K. Dean

## M I S C E L L A N E O U S

Mr. S. H. Hastings left Washington on July 5 for a field trip to the Northwest.

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W E E K L Y R E P O R T S  
of the Division of  
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(Not for publication without the prior consent of this Division)

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Belle Fourche

July

The maximum temperature for the month was 100° and the minimum was 50°. The mean temperature was 73° which is equal to the normal. The precipitation was 1.13 inches which is 1.26 inches less than the normal. No rain has been heavy enough to benefit crops since May 31, and the total precipitation to August 1 is 3.61 inches below normal.

The 23d annual farm picnic was held July 16 with an average attendance. Approximately 950 cars were checked in during the day and evening.

Harvesting of the second cutting alfalfa and of small grains was completed. The yields were considerably below normal due to damage by the grasshoppers. Grasshoppers and blister beetles continued injurious to crops during the month. Poisoning was carried on but with very little beneficial results.

The allotment of water this year is one acre foot. Due to dry weather this is not sufficient to carry all crops through the season. Some of the station field crops will have to be abandoned in order to have sufficient water to take care of the experimental plots, grounds, and irrigated forestry.

A 4-H Club Judging School was held at the farm July 29-30, with boys from 4 counties attending. Guy McDonald, extension livestock specialist, State College, Brookings, was in charge of the school, assisted by the County Agents.

Station visitors were A.D. Ellison, Soil Conservation Service, and J. Allen Clark, Cereal Investigations.

Beyer Aune.

Huntley

The maximum temperature during the two weeks ending July 30 was 96° and the minimum was 47°. There was .66 of an inch of precipitation.

Crop conditions continued favorable during this period. Grains and second cutting alfalfa are being harvested over the project with good yields in prospect. Yields of winter wheat on dry lands adjacent to the project are reported to be from 30 to 45 bushels per acre. The present local market for winter wheat, including premium for high protein content, is about 50¢ per bushel. Other station activities included irrigation of all crops, and cultivating and hoeing.

Huntley, continued

Station visitors included Dr. Edwin J. Wellhausen of the Agronomy Department of the Montana Experiment Station.

Dan Hansen

Newlands

Temperatures have been slightly below normal during the four week period ending August 6; the maximum was 100°; minimum, 43°; mean, 73.6°. The mean temperature for July was 71.7° as compared with a 32-year average of 73.5°. The average wind velocity was 1.67 miles per hour. There was .07 of an inch of precipitation. The maximum temperatures have been sufficiently high to result in normal growth to second crop alfalfa. So far, no market price has been established for alfalfa hay.

Station activities consisted of cultivating corn, irrigating the entire station area, threshing grain from rotation plots, and hoeing weeds. The W.P.A. crew finished the new horse barn and an additional septic tank, and is now engaged in constructing some beef-feeding pens for individual feeding experiments to be conducted this fall. The plan calls for 24 individual pens, shelters, feed racks, and water facilities to be located directly south of the present dairy buildings.

The turkey experiment and dairy work are showing progress. To date the turkeys in the selected breeding pens are showing greater gains than the ones from the ordinary run-of-stock.

Station visitors were Mr. F.B. Headley; Dr. Magistad, Riverside; and Mr. S. H. Hastings. The superintendent met Mr. Hastings in Reno where they called on Director Doten and Mr. Headley before returning to the station.

E. W. Knight

ProsserJuly

The temperatures for July were exceptionally high. From July 12 until the end of the month the maximum did not drop below 90°. The temperature rose above 100° on seven of the days. The maximum for the month was 107° and the minimum was 46°.

The reservoirs of the Yakima Irrigation System contained 900,000 acre feet of irrigation water on July 31.

Station activities included harvesting wheat plots and the second cutting of alfalfa hay. Other activities included routine irrigating and weeding.

The sugar beets on the Outlook Reclamation plots are making exceptional growth. The stand of sugar beets on plots 1 and 6, planted April 29, is poor, but a fair yield is anticipated. During the latter part of the month, prior to irrigation, the water table dropped to the 8 foot level.



Prosser, continued

Mr. S. H. Hastings arrived at the station July 18 on his annual inspection trip. Dr. O.C. Magistad visited the station and the Outlook Reclamation Project July 16. He was accompanied by Dr. E.L. Overholser, representative for the State of Washington, of the new Regional Salinity Laboratory at Riverside, California, and Dr. S.C. Vandecaveye, Head of the Soils Section of the Department of Agronomy, Washington State College.

Other station visitors were Mr. H.B. Roe and his assistant J.K. Parks, Department of Agri. Engineering, University of Minnesota; Dr. A.B. Burrell, Plant Pathologist, Cornell University; Mr. J.F. Trost, Manager of Hybrid Seed Corn Association, Lafayette, Indiana; E.G. Schafer, Head of the Agronomy Department, Washington State College; M.C. Lane, Entomologist, Wireworm Laboratory, Walla Walla, Wash.; Mr. Thomas Purvis, strawberry clover seed producer, Victoria, Australia; and H.K. Dean, Superintendent of the Umatilla Field Station, Hermiston, Oregon.

Carl A. Larson

Scotts Bluff

The maximum temperature for the two weeks ending July 30 was 95°; minimum, 50°. The mean daily wind movement was 4.75 miles per hour. There were 1.74 inches of precipitation. The total precipitation for the month of July amounted to 3.30 inches as compared with a 29-year mean of 1.53 inches. This has been the wettest July we have had since 1923, when the precipitation that year amounted to 3.34 inches.

Station activities included cutting and shocking barley, cultivating corn, potatoes, and tomatoes, and irrigating sugar beets, corn, and alfalfa. The threshing of small grain has begun in the valley. Potatoes were sprayed in an effort to control the psyllid insect.

The crops on between ten and twenty thousand acres of irrigated land in the North Platte Valley were damaged by a hail-storm which occurred on the 19th. The small grains which had not been cut and the field beans were damaged severely, and even the grains in the shock were affected. No losses are anticipated from the potatoes and beets.

From 10% to 20% of the 800 acres of beans contracted by the Otoe Food Products Cannery is threatened by the bacterial blight disease. The factory opened on the 25th for this year's canning season.

Dean W.W. Burr and L.L. Zook were station visitors. Mr. L. M. Buskley, auditor, University of Nebraska, made his annual audit of the station books on the 20th.

Lionel Harris

Yuma

The maximum temperature for the two-week period ending July 30 was 110°; minimum, 72°; precipitation, .26 of an inch. High temperatures, high humidity, and occasional thunder and windstorms have prevailed during this period. Much damage to the alfalfa seed crop occurred from the rains and blowing of the shocks and wind-rows.

Cotton has been shedding profusely. Late planted cotton has failed to set on much of a crop. Insect damage by the Tarnished Plant Bug and the Stink Bugs continues much in evidence. Population records show more of these insects present in the Bard area of the project than for 1937, although the local infestation is still lighter than the Yuma Valley. Alfalfa seed harvest continues in all sections of the project with yields in many cases below normal. Some few sales of seed have been reported at around 16¢ per pound.

The U.S. Geological Survey report for July on the Colorado River shows the discharge for the month at Grand Canyon to be 1,747,000 acre feet. Last July it was 1,370,000 acre feet. The discharge below Boulder Dam was 599,900 acre feet and the estimated storage in the Lake Mead Reservoir as of July 31, 1938, was 23,200,000 acre feet.

Station activities included the harvesting and threshing of alfalfa and sweetclover seed, planting grain sorghums and corn plats, cultivating grain sorghums, leveling fallow plats, general irrigating and hoeing.

U.C. Loftin and T.P. Cassidy of the Division of Cotton Insects of the Bureau of Entomology visited the station on July 21 and 25.

E.G. Noble



W E E K L Y R E P O R T S  
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Belle Fourche

August

A temperature of 106° which is the highest on record for August for 30 years was recorded on the 2nd. The minimum was 45°. The total precipitation for the month was .60 of an inch as against 1.42 inches normal. The total precipitation from January 1 to August 31 was 8.01 inches which is 4.43 inches below normal. The evaporation was 1.12 inches above normal and the wind movement was average.

The grasshoppers practically destroyed the second cutting alfalfa and also delayed the starting of the third crop. However, after August 15 most of them moved out and crops have again resumed normal growth where irrigation water has been available. As far as saving the crop was concerned the poison bait which was spread continuously from June to August 10 seemed a wasted effort. Small grains, alfalfa, potatoes and gardens were injured by insect pests. Sugar beets and corn are in good condition and expected yields are above average.

Station visitors were Dr. E. C. Auchter, Chief of Bureau of Plant Industry, Mr. C. S. Scofield, Mr. S. H. Hastings, Director I. B. Johnson, Guy McDonald, Forest U. Fenn, Messrs. Watson and Moxon, and Lionel Harris.

Beyer Aune.

Huntley

The maximum temperature for the 3 weeks ending August 20 was 95°, minimum, 39°, precipitation, .66 of an inch.

Late crops, including corn and beans, are making slow growth and will be delayed in maturing due to cool, rainy weather during the latter part of this period. The potato crop over the valley will be very short as a result of damage from purple top disease caused by an unusual occurrence of psyllids.

Station work included the harvest of grains, irrigation of all late crops, and weeding. The maximum yields of grain in the dry land plots were as follows: Winter Wheat 46.7 bu., Spring Wheat 48 bu., barley 51.7 bu., and oats 79.1 bu. per acre. The average yield of oats in the irrigated rotations was 69.4 bu. and the maximum 118 bu. per acre. The maximum yield of barley was 91.4 bu. and the average 48.55 bu. per acre.

Curly top disease in sugar beets is prevalent in the upper valley sections, particularly in the early beets. In the beet variety tests the Department resistant varieties are free from

Huntley, continued

Curly top disease while the adjoining plats of ordinary commercial seed show about 30% of the beets diseased.

Station visitors included Dr. E.C. Auchter, Messrs. C.S. Scofield and S.H. Hastings, E.J. George, and Dr. C.E. Leighty of the Bureau of Plant Industry, and Director Clyde McAfee, Professor H.E. Morris, Dr. Edwin J. Wellhausen, Dr. M.M. Afanasiev and Prof. F. M. Harrington of the Montana State Experiment Station.

Dan Hansen

Newlands

The maximum temperature for the 2-week period ending Aug. 20 was 92° and the minimum 42° with a mean of 67.9°. There was no precipitation.

The work at the station has consisted of stacking hay, preparing some 12 or 13 acres for alfalfa seeding, irrigating and cultivating. The feeding pens being constructed as a W.P.A. project are about two-thirds completed. These pens with feed racks, drinking troughs, and sheds should be completed during the next two-week relief labor period.

The total hay production to date at the station has averaged 2.7 tons per acre for the two crops. This is about .7 tons less than normal. The spring wheat produced about a 50% crop due to a heavy infestation of rust. Many spring wheat crops about the project were not threshed as the shrinkage was so great that the expense of threshing would not pay. Much of the grain was cut and will be fed as hay. Little hay is being sold as livestock feeders have not arrived on the projects.

Dr. Richard Rosenfels and his assistant, Jack Matley, arrived at the station on Aug. 15 to undertake studies of the White top weed. Plots have been established on 3 areas about the project fairly representative of soil conditions. Applications of weed eradicators and cultivating methods have started. The chief studies will concern root composition, that is, periodic analysis of roots to determine principally the starch content. In this manner the vitality of the plant can be determined during its seasonal growth. Thus, time of application of eradicators may be determined whereby the best results can be had from their application.

E. W. Knight.

Prosser

The maximum temperature for the four-week period ending Aug. 27 was 94° and the minimum 35°. The rainfall amounted to .02 inch.

The 18th Annual Field Day was held at the station on Aug. 2. Approximately 600 persons visited the station, which exceeds the number of visitors last year by 100. Much interest was shown in



Prosser, continued

all phases of the experimental program. In regard to the crop rotation series there were many questions from growers about the effect of rotations on wireworm populations. The station staff was assisted by representatives from the various interested departments from the State College of Washington at Pullman, Washington.

The average yields of alfalfa hay for the first and second cuttings were 2.79 and 2.14 tons per acre, respectively. Wheat from rotation plots was threshed. The highest yield was 60.6 and the lowest was 25.7 bushels per acre. The mean yield was 41.5. The wireworm population on rotation 5, continuous wheat plot with manure, has increased from 3 worms per foot in 1936 to 11.5 worms per foot in 1938. The yield of wheat from this rotation this year was 27.3 bu. per acre.

Station activities included harvesting pears, cultivating potatoes and routine irrigation. Soil samples for specific conductance determinations were taken on all plots in the Outlook Reclamation Project.

A W.P.A. project to supply labor for experimental work now in progress has been approved for the station. As the authorization came too late for this season's work the majority of the labor will be used next season. Plans for the present are to obtain a typist and part-time clerk in the office.

Shipments of produce from the Yakima Valley this season are slightly above the shipments made last season at this time. The top price of U.S.No.1 potatoes is \$14 per ton. Butterfat remains steady at 24¢ per lb.

Visitors other than field day guests were E.T. Edwards, Plant Pathologist, New So. Wales, Australia; Mr. M.R. Lewis, Irrigation Engineer, Lloyd Brown, Soil Conservation Serv., Ellensburg, Wash., Dr. D.C. Smith, Agent, Bu. Plant Industry Grass Breeding & Improvement, and Wm. Harvey, State College, Pullman.

C.A. Larson

Scotts Bluff

The maximum temperature for the three-week period ending Aug. 20 was 102°, minimum 49°. The mean daily wind movement was 5.4 miles per hour. There was .71 of an inch precipitation.

Station activities included hauling the second cutting of alfalfa hay from the Walker place; irrigating sugar beets on the rotation plots in Field E, the hybrid corn block, the sweet corn planting, and the certified potato field; and weeding and cultivating corn and certified potatoes. The certified potatoes were sprayed. At this time they show no purple top, but there has been some development in the rotation plots. From a very general examination the damage seems to be worse in the poorer rotations. Many fields of early planted late potatoes in the valley are show-

Scotts Bluff, continued

ing rather extensive purple top infestations. Barley, wheat, and oats have been threshed at the station. The yields of oats were good, but the yields of barley were very disappointing due to hail damage. It is estimated that the hail reduced the yield approximately 30 bu. per acre. The oats were cut and shocked before the hail occurred, consequently suffered little damage.

All irrigated crops in the valley made rapid growth. The highest temperatures experienced during the present growing season occurred during the week ending Aug. 6 when the maximum ranged close to 100° throughout the week. Tomatoes which were retarded because of the cool weather during June and July have made good growth. The hot weather has placed a heavy demand on irrigation water, and ditches have been flowing to their capacity.

Psyllids have been discovered in great numbers again, consequently they still constitute a serious menace to the potato crop. A renewed spraying program will be necessary where the vines are small enough to permit the sprayers to pass through the patch. There is an epidemic of bacterial blight of beans in the field bean plantings over the valley. A rather large portion of the tomato crop planted for the Otoe Food Products Canning Company is affected by bacterial canker disease. These diseases will reduce the yields of the two crops materially. The sweetcorn deal for the canning factory promises to be very satisfactory for both growers and canners as good yields of excellent quality corn are being harvested.

As a result of the recent suit brought by the Kearney Irrigation District to force the State of Nebraska to satisfy their priority rights on the North Platte River water, all canals in the North Platte Valley using natural flow water have been closed in an attempt to deliver the desired water to the Kearney District. This action has caused great concern to farmers in the North Platte Valley. However, some have interpreted the action to be a specific test to definitely show that it is not feasible to deliver water to the Kearney District according to its priority claim.

The annual station Field Day held Thursday Aug. 18 was attended by a large crowd. Features included inspection of experimental projects, child health conference, picnic lunch, and dairy meeting. Also, there were foot races and games and entertainment for the ladies and children. Much interest was shown in the inspection of experimental projects and in the child health conference.

## Summary of Yields of Second Cutting of Alfalfa, Field "K"

	Total Yields	
	Lb. per plat	Tons per acre
Maximum	1,070	2.14
Minimum	337	0.67
Mean	793	1.59



Scotts Bluff, continued

Station visitors: Dr. E.C. Auchter, Chief of the Bureau, Mr. C.S. Scofield, Mr. S.H. Hastings, Dean W.W. Burr, Dr. A.C. Hildreth, Dr. H.M. Tysdal, Prof. H.P. Davis, Mr. Geo. Trimberger, and Dr. H.O. Werner. An inspection tour of the station and also of the surrounding valley was made by Dr. Auchter accompanied by the above officials. Mr. S. H. Hastings, Prof. H.P. Davis, and Mr. Lionel Harris had a conference with Mr. Charles Kearney and Mr. John R. Jirdon of Morrill, Nebraska, regarding dairying in the North Platte Valley. Other visitors were Dr. Henry A. Jones, Principal Olericulturist, Dr. T.P. Dykstra, Assoc. Pathologist, Mr. W.C. Edmundson, U.S.D.A., Drs. H. O. Werner and R.W. Goss, Univ. of Nebr. Mr. Lyman H. Andrews, Manager, Great Western Sugar Co., Sterling, Colorado, together with several field men visited the station and inspected the work, particularly that being carried on with sugar beets.

Lionel Harris.

UmatillaAugust

During the month the maximum temperature was 101°, minimum 46° and mean 72.3°. The average wind movement was 4.1 mph. The average daily tank evaporation was .318 inch. Precipitation, trace. Growing conditions remained very favorable throughout the month resulting in an exceptionally heavy third cutting of alfalfa and the rapid maturing of late crops.

The watermelon crops were marketed two weeks earlier than in most years. Prices barely covered production costs as the demand was poor. Of the Fusarium wilt-resisting varieties cooperatively placed with growers this year on land having wilt, only Klondike R 7 is of a type suitable for Northwest markets. It proved resistant to local strains of wilt and is apparently a good yielder. This variety will be generally used by growers next year.

Dr. B. F. Dana, Division of Fruit & Vegetable Crops & Diseases, spent a considerable portion of August at the station taking notes on his crops. The tomato selections for resistance to curly top made since 1932 have all succumbed to the disease this season. One introduction from South America apparently has complete resistance but the strain is very late. However, it does offer promise as breeding stock. Two other small-fruited strains, also from South America, carry partial resistance. Many of the bean selections from dry varieties and crosses with green beans are not seriously affected while their green parents have gone down 100%.

Two field days were held during the month. One, sponsored by the local Granges and Farm Bureau was of a general nature with particular attention to pasture crops. The attendance was about 150 including 50 boys and girls who judged livestock and crops. The other was the annual picnic of the Eastern Oregon Turkey Growers. During the morning the results of last year's feeding experiments and the current breeding project were explained while in the afternoon H. E. Cosby, Head of the Poultry Department at Corvallis discussed feeds and A. Willardson, Los Angeles marketing agent for the Northwest Turkey Growers talked on marketing problems.

Umatilla, continued.

Other visitors included four men from the Soil Conservation Service investigating burned and blow areas; Messrs. Clore and Wellman of the Prosser station, and V. L. Powers and M. R. Lewis, Corvallis.

H. K. Dean.

Yuma

The maximum temperature for the two weeks ending Aug. 13 was 112°, minimum 70°, average wind velocity 1.5 m.p.h., precipitation, 0.4 inch. Two local thunderstorms with high winds caused some damage to the alfalfa seed crop which was being harvested. Seed in the shock or wind-row was blown from the fields in many cases. The precipitation was heavier in the Gila and Yuma Valley sections.

Cotton has continued to shed. Unless favorable conditions prevail during the remainder of the season, a lighter than normal cotton crop will be harvested. Picking and ginning operations have begun with 60 bales being turned out to date from the 3 operating gins on the project. Approximately three-fourths of the cotton coming in to the gins is from "stubbed" fields.

Alfalfa seed threshing operations continue with the bulk of the crop already in the warehouses. Yields for this season will be somewhat below normal as approximately 3,500,000 lbs. will represent the total crop. In 1937 the crop was 5,000,000 lbs., including the Gila Valley districts. Prices of seed remain nominal with a few sales being made at .16 per lb.

Cooperative work with the Imperial County Agricultural officials<sup>and</sup> the Bard Irrigation District and the field station has resulted in a marked improvement in the purity of all alfalfa seed harvested previous to harvesting operations and all dodder, white horsenettle and Johnson grass were cleaned up.

Station work included the cultivating of corn and grain sorghum plats, hauling manure, repairing and cleaning ditches, repairing machinery, general irrigating, and hoeing.

Mr. C. J. King of the Division of Cotton and Other Fiber Crops and Diseases at Sacaton, Arizona, visited the station on August 13.

E. G. Noble

## M I S C E L L A N E O U S

Dr. E. C. Auchter and Mr. C. S. Scofield returned to Washington on August 13 after having spent two weeks inspecting the field stations of the Northern Great Plains.

Mr. S. H. Hastings returned from his field trip to the Northwest on August 15.



W E E K L Y   R E P O R T S  
of the Division of  
WESTERN IRRIGATION AGRICULTURE  
Bureau of Plant Industry

(Not for publication without the prior consent of this Division)

Vol. XL	Aug. 21-Sept. 10, 1938	No. 15
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Huntley

The maximum temperature for the 2 weeks ending Sept. 3 was 93° and the minimum was 42°. There was .32 of an inch precipitation.

Conditions for crops during this period were favorable and such late crops as beets and corn are making good growth. The harvest of beans is under way in most sections of the valley. Good yields of Great Northern beans are in prospect, while the garden varieties are in many cases seriously affected by disease and yields will be light.

Station work included irrigation of beets, potatoes, and alfalfa, and harvesting beans.

The annual Beet Growers tour of the station was held on Sept. 1. While showers interfered somewhat with attendance, about 100 growers were present. Following an inspection of the field plots, a meeting was held in Project Hall. Speakers at this meeting were Director Clyde McKee, Professors O. W. Monson and H. E. Morris of the Montana State Experiment Station, and Mr. Jack Maynard of the Feeds Department of the Great Western Sugar Company.

Station visitors included Director McKee, Professors H. E. Morris, O. W. Monson, and A. H. Post, and Dr. Afanasiev of the Montana State Experiment Station, and Dr. J. E. Kotila and Dr. E. L. LeClerc of the Division of Sugar Plant Investigations.

Dan Hansen

Newlands

The weather has been about normal during the three-week period ending Sept. 10 with the maximum temperature 92°; minimum, 40°; and a mean of 68.1°. There was .18 of an inch of precipitation.

Farm prices about the project are the lowest recorded during the past four or five years. Little hay is selling, although some offers of \$6 per ton have been recorded. Wheat is bring \$17 per ton and barley \$18. The San Francisco prices on livestock are as follows: beef, 8¢; hogs, 9-1/2¢; lambs, 8¢; and butterfat, 26-1/2¢.

Work at the station consisted of hoeing weeds, cleaning ditches, reseeding some pasture areas, seeding about 16 acres of alfalfa, and chopping hay for the dairy cows. The steer feeding pens built as a W.P.A. project with materials furnished by the Nevada State Experiment Station are about complete. The 24 pens are equipped with shelters, feed racks, and concrete water troughs, and each will house one steer. Individual feeding records can thus

Newlands, continued

be obtained. It is expected the experiment will start about Oct. 15. Other W.P.A. work includes repairing and painting some of the station dwellings.

The weed investigations being conducted from this station as headquarters are progressing as planned. Numerous root samples of White Top have been taken from the plats laid out with this object in view. Cultivations are being given as planned. In addition, several areas have been treated with carbon bisulphide, arsenates, and other weed eradicators.

A dairy tour was conducted under the auspices of the County Extension Agent. The pasture plots and pasture feeding experiments of the station were visited. From this starting point, other pastures about the project were visited. Station visitors in addition to these tour people were Assistant Director of Extension Thos. Buckman, Regional Extension Leader Otto Schultz, Mr. F. B. Headley of the State Station, and R. R. Graves of the Dairy Division of the U. S. Department of Agriculture.

E. W. Knight

Prosser

The maximum temperature for the 2 weeks ending Sept. 10 was 95°, and the minimum was 39°. There was no precipitation.

Station activities included routine irrigation and weeding. The alfalfa hay was cut for the third time on the crop rotation series. The crop of Jonathan apples was color-picked for the early market.

Carl A. Larson

Scotts Bluff

The maximum temperature for the 3-week period ending Sept. 10 was 100°, minimum, 47°. There were 2.5 inches of precipitation. An extremely beneficial rain fell over this region Thursday night Sept. 1 and Friday. The rain began with a slow drizzle and continued for 24 hours, resulting in approximately 2 inches of precipitation--all of which soaked into the soil.

Station activities included irrigating potatoes, sugar beets, corn, beans, and alfalfa, and cutting and shocking corn. Hot, dry weather during the last part of August resulted in heavy water demand for all crops, consequently frequent irrigations have been necessary on sugar beets and potatoes, and an additional irrigation has been required for field corn. Fences on the sweetclover pasture plots in rotations 45 and 41 have been moved to the current seeded plots, and sheep have been turned in to graze on the fall growth of sweetclover. The machinery to be used in placing corn in the silo has been repaired.



Scotts Bluff, continued

A sudan grass pasture has been plowed and seeded for the pasture grass adaptability test. The test includes 7 clovers, 10 grasses, and 3 grass mixtures. Each grass mixture, grass, and clover has been seeded alone, and each of the grasses and mixtures have been seeded in combination with the 7 clovers. It has been planned to make a planting of alfalfa each week during the next two months in order to determine how late alfalfa can be seeded, and particularly whether or not it can be seeded late enough to avoid the damaging attacks of grasshoppers and at the same time become sufficiently well established to avoid winter injury.

Irrigators in western Nebraska using natural flow water have organized, and are making urgent demands on Gov. Cochran to re-open their canals. The canals have been closed to permit delivery of water to the Kearney irrigation district which holds the oldest priority right on North Platte River water. Efforts are being made by the local organization to have the Kearney priority condemned.

Mr. Leslie Bowen, Federal Irrigation Engineer, who has been performing irrigation experiments at the Scottsbluff field station since 1932 died August 26 at the Veterans Hospital, Cheyenne, Wyo. Mr. Bowen had been seriously ill for several weeks, and in poor health since May. He would have celebrated his 41st birthday on September 9. Funeral services, in charge of the American Legion and the Church of Jesus Christ of the Latter Day Saints, will be held Tuesday, August 30, at his former home, Spanish Fork, Utah. Mr. Bowen graduated from the Utah State Agricultural College in 1923. He was coach at Burley, Idaho, high school from 1924 to 1928. Following his coaching activities, he served as deputy water commissioner of the Sevier River in Utah. After this he worked for two years at the Bear River game bird refuge on the north end of Great Salt Lake. He was transferred from this work in 1932 to the Scottsbluff field station where as a result of well performed irrigation experiments, he worked out some fundamental principles regarding water use of crop plants in the North Platte Valley, and also fundamental methods of handling and distributing water.

A very severe infection of early blight has occurred on late crop potatoes in the valley. The blight has spread rapidly through all fields directly after the 2 inch rainfall which occurred the first part of September, and as a result, practically no further growth will be made by the plants. Many fields are completely brown, particularly fields which were planted near the first of June. On the station the potato plantings have escaped the blight, and are making excellent growth at this time. The absence of blight on the station has been attributed to the fact that most of the plantings were made after the 15th of June. It has been estimated that the purple top and blight together will reduce the yields in the North Platte Valley at least 50%.

Dr. E.F. Frolick and Mr. L.C. Newell, U. of Nebr., both of whom are interested in the pasture grass adaptability test that is being established, visited the station. Drs. LeClerc and Kotila were visitors. Two days were spent at the Belle Fourche station consulting with Mr. Aune about station work.

Lionel Harris

Umatilla

During the two-week period ending Sept. 10 the maximum temperature was 98°, the minimum was 47°. There was .06 of an inch of precipitation.

During the period Aug. 29-Sept. 6 the third crop of hay was harvested. The crop was generally good with the exception of part of the varieties which were damaged by grasshoppers. The alfalfa seed tests have been harvested. Other work included weeding and cleaning ditches.

Visitors were W. L. Powers, Oregon Agr. College Soils and Irrigation specialist, and M. R. Lewis, Bureau of Agr. Engineering; and W.M.Hurst, Bur. of Agr. Engineering who has devised a pyrethrum harvesting machine.

H. K. Dean

Yuma

The maximum temperature for the two-week period ending Sept. 3 was 110°; minimum, 71°; precipitation, .05 inch. The rainfall recorded at the station was only a small portion of that from 5 thunderstorms which produced heavy rains in other sections of the project and outlying areas. Cloudy weather and conditions of high humidity have prevailed during this period. This return of normal summer weather has caused cotton to resume its shedding tendency. The stink bugs are still prevalent and the bolls opening during the last part of August have shown a high percentage of insect damage. The 4 operating gins on the project report as of Sept. 2, 1,090 bales of cotton ginned.

The alfalfa seed harvest has been completed with the exception of the second crop which is being made on some fields. Seed prices are quoted as 12 to 14¢ being offered by buyers but most of the crop is being held in the warehouses for a higher figure.

Lettuce land is being prepared for Sept. plantings. The probable acreage on the Yuma Project, mostly in the Yuma Valley section, will be about 8,000 acres--up 1,000 acres from last year.

Station work included the cultivation of corn and grain sorghum plats, hauling manure, cleaning ditches and borders, general irrigating and hoeing.

The August report on the Colorado River by the U.S. Geological Survey shows the flow at Grand Canyon to have been 550,000 acre feet; the discharge as gaged at Parker to be 607,500 acre feet, leaving a net storage behind Boulder Dam of 22,940,000 acre feet.

Dr. O.C. Magistad, Dr. C. Thom and Dr. F.E. Clark visited the project on August 24.

E.G. Noble

M I S C E L L A N E O U S

Mr. Scofield left Washington Sept. 8 for Riverside where he will participate in a meeting of the collaborators of the new salinity laboratory. He plans to return to Washington on October 15.



W E E K L Y R E P O R T S  
of the Division of  
WESTERN IRRIGATION AGRICULTURE  
Bureau of Plant Industry

(Not for publication without the prior consent of this Division)

VOL. XL

Sept. 11-24, 1938

No. 16

Huntley

The maximum temperature for the three weeks ending September 24 was 93° and the minimum was 34°. There was .56-inch precipitation the first two weeks.

Weather conditions continued very favorable during this period and the harvest of crops, excepting beets and potatoes, is nearing completion in most sections of the valley. Delivery of beets to company receiving stations is scheduled to begin on September 27, with an estimated yield for the entire district of about 13 tons per acre. Threshing of beans is under way. The market demand for this crop is dull and local buyers are offering \$1.70 to \$1.80 per cwt. Farm prices are: alfalfa hay, \$6 per ton, and feed grains, including oats, and barley, 65 cents to 75 cents per cwt. Potatoes locally are bringing \$1.25 cwt., with a short crop due to psyllid injury.

Station work included harvest of third crop alfalfa, silage corn, threshing of beans, and the seeding of grain in the dry land plots.

Station visitors were Mr. D. J. Pletsch, Wm. Forsyth, Professor H. E. Morris, Dr. M. M. Afansiev and Dr. E. J. Welhausen of the Montana State Experiment Station, and Dr. R. R. Graves of the Bureau of Dairy Industry.

Dan Hansen

Newlands

The maximum temperature for the two-week period ending September 24 was 89°; the minimum was 40°. There was .03-inch precipitation. The weather during this period has been about normal with the exception of the usual date of the first fall frost. A 32-year average has placed the average occurrence of this frost on September 23. The lowest recorded September temperature to date has been 40°.

The usual fall work at the station has kept most of the station personnel busy. The silage corn has been harvested with the heaviest per acre production ever recorded, averaging 9-1/3 tons per acre. Third crop hay has been cut. The indications are for a more than average yield. Most of the A series of plots show an exceptionally heavy crop.

The steer feeding pens have been completed. They are ready for the start of the feeding experiment. Some 270 lambs arrived at the station on September 21. They are undergoing a period of adjustment after coming off range feed and preceding the start of the experimental feeding. A new platform scale has been installed to weigh sheep and steers.

Newlands (Continued)

Messrs. C. S. Scofield and L. V. Wilcox of the Rubidoux Laboratory, were station visitors on September 24 and 25. The field work of the station was thoroughly investigated and some future plans laid. It is the opinion of Mr. Scofield as well as the station personnel, that some of the Y series plots can now be pronounced as reclaimed. Plots Y2, 3, and 4 proved particularly interesting as they were cropped with truck plantings this year.

On September 25, Director Doten and F. B. Headley of the State Station visited with Mr. Scofield. At this time that phase of the co-operative livestock work was discussed and future plans explained. An additional station visitor was Mr. L. W. Kephart of the U. S. Department of Agriculture. The occasion was the investigation of the weed control studies being done at this station.

E. W. Knight

Prosser

The maximum temperature for the two-week period ending September 24 was 94° and the minimum was 40° degrees. The extension of the heat wave this late in the summer and early fall has broken all records. The drought still continues, although there was a trace of rain. The weather has been so warm that apples have not colored very well. In fact, they are ripening and falling without putting on color.

Station activities during the two-week period included stacking hay and routine irrigation and weeding. The remaining Jonathan apples were picked.

The mean yield of alfalfa hay for the third cutting was 2.05 tons per acre. The mean total yield for the season was 6.98 tons per acre.

The harvest of sugar beets in the Wapato district was started the week of September 19 and the sugar plant began operations September 21. Beet harvesting in the lower Yakima Valley will not start before October 1.

The Station cannery operated by the Division of Food Research, Bureau of Chemistry and Soils, has been closed for the season. The investigations with tomatoes will be conducted at the laboratory in Pullman, Washington.

Station visitors included Mr. M. R. Lewis, Irrigation Engineer, Soil Conservation Service, Corvallis, Oregon.

Carl A. Larson

Scotts Bluff

The maximum temperature for the three weeks ending October 1 was 90°, minimum was 41°. There was .58 inches precipitation the first week.



Scotts Bluff (Continued)

The Scotts Bluff county fair was held from September 14-17 inclusive. Attendance totaled 63,000 which was approximately 3,000 more than last year. The Scotts Bluff Field Station established educational exhibits at the fair dealing with the psyllid insect causing the purple top disease of potatoes, bacterial wilt of alfalfa, irrigation experiments, sorghum and tomato variety tests, dairying, and crop rotations. One of the most popular displays at the fair was the exhibit dealing with the psyllid insect. Each stage of the insect's development, including the egg, three nymph stages, and the adult, both male and female, were on display under magnifying glasses. The symptoms of the purple top disease on the plants also were shown in various stages.

On September 22, over 100 farmers from North Platte, Neb., and Ovid, Colo. sections visited the station, and were conducted on a tour of the experimental projects. The visitors chiefly were interested in the rotation experiments, and the experimental work with sugar beets and alfalfa.

The potato harvest has commenced in the valley. The severe infestation of early blight which occurred during the first week in September, produced the same effects as a frost in maturing the potatoes. Consequently, at the present time, tubers are well matured, and are being placed in the cellar without the usual skinning and cracking, which so often accompanies the harvesting and storing of the delicate Triumph potato. It has been estimated that in the North Platte Valley the purple top and early blight diseases have reduced the yield of potatoes approximately fifty per cent.

Irrigation water was shut off Thursday, September 29. Approximately 2-1/4 acre feet of water has been delivered to farmers from the Government canal during the past season. On October 1, storage in the Pathfinder reservoir amounted to 248,520 acre feet; in the Alcova reservoir, 131,370 acre feet; and in the Guernsey reservoir, 22,380 acre feet; making a total storage for the three reservoirs of 402,270 acre feet. There is more water in storage in Lake Minatare this year at this time as compared with last year.

Station activities included plowing and leveling ground in preparation for fall pasture grass seeding, seeding alfalfa in rotations 64, 71, 48, and 44, seeding winter wheat on the dry land, irrigating alfalfa, establishing educational exhibits at the county fair, stacking the third crop of alfalfa hay from the rotation plots, seeding and irrigating fall pasture in field C, digging potatoes, repairing sheep pens, irrigating the fall rye seeding and listing the dry land areas to prevent blowing.

Station visitors during the three weeks included Dr. James H. Jensen and Mr. W. E. Deacon of the Pathology Department of the University of Nebraska, and Dr. H. O. Werner.

Lionel Harris

Yuma

The maximum temperature for the two-week period ending September 24 was 107°; minimum temperature was 64°; precipitation was 0. Higher than normal temperatures and humidity readings have prevailed throughout the period.

Cotton picking and ginning continues on the project with approximately 2,000 bales ginned to date. Due to insect injury many fields in the lower Yuma Valley have been plowed up after the first picking. In most cases these lands will be planted to flax this fall. It has been estimated by the county agent that about 3,000 acres will be grown this winter in the Yuma Valley.

Alfalfa hay and seed prices remain low with very little of these crops being moved to market.

The construction work on Imperial Dam has been completed and the All-American Canal is about finished with the exception of some structures in the Imperial Valley. Water is to be turned into the canal on October 17 if arrangements for dedication ceremonies by Secretary Ickes are perfected for that date.

On September 24 there was stored in Lake Mead 23,190,000 acre feet of water. On the same date the total flow of the Colorado River past Yuma was 7,370 cubic feet per second.

Station work has included the harvesting of the sixth crop of alfalfa from the rotation plats; renovating and reseeding alfalfa plats; planting vetch; plowing under summer cover crops; repairing station water lines; general irrigation and hoeing.

E. G. Noble



NEWS LETTER

of the

DIVISION OF WESTERN IRRIGATION AGRICULTURE  
Bureau of Plant Industry, United States Department of Agriculture

(Not for publication without prior consent of the Division)

VOL. 40Washington, D. C., October 26, 1938NO. 17U. S. Huntley Field Station, Huntley, Montana

The maximum temperature for the three weeks ending October 15 was 91° and the minimum was 34°. There was 0.23-inch precipitation.

Favorable weather for harvest prevailed during this period and rapid progress was made in the harvesting of beets and other late crops. The beet harvest started on September 27 and about two-thirds of the crop has been delivered to receiving stations. The yield of beets will probably exceed the pre-harvest estimate of 12 tons per acre.

Station work during this period included the harvesting of beets and potatoes, hauling manure and fall plowing. Potatoes in the irrigated rotations returned an average yield of 143.3 bushels per acre. Of the total yield only 56.4 per cent of the tubers were of marketable size. This was only about one-half the normal yield of marketable potatoes. While never grown to any large extent in this section, potatoes are returning yields less than one-half normal and in some cases are almost a complete failure due to the effects of Purple Top disease and early blight. Since this was the first serious outbreak of Purple Top in this area, the proper spraying equipment was not available, or was not used until too late to be of much value in controlling the disorder.

Professor H. E. Morris and Dr. M. M. Afansiev of the Montana State Experiment Station spent a week here in harvesting crops in the cooperative experiments and in making disease surveys of beets and potatoes in the irrigated rotation plots.

Dan Hansen

Washington Irrigation Branch Station, Prosser, Washington

The maximum temperature for the two-week period ending October 8 was 82° and the minimum was 36°. The precipitation amounted to 0.54-inch, all of which fell the first week in October.

Station activities included routine irrigation of alfalfa and weeding, picking Delicious and Rome Beauty apples, weeding fence and flume lines, and harvesting corn.

Washington Irrigation Branch Station (Continued)

The reservoirs of the Reclamation Service held more than 470,000 acre-feet of water on October 8. This amount is 21,000 acre-feet larger than was held last year on this date.

There are approximately 300 acres of sorghum grown in the Sunnyside Valley Irrigation District this year. Two mills are processing the canes. This new industry has promise and the acreage of sorghum is expected to increase.

Messrs. C. S. Scofield and L. V. Wilcox visited the Station and Outlook Reclamation plots October 3 and 4.

Carl A. Larson

U. S. Newlands Field Station, Fallon, Nevada

The maximum temperature for the two-week period ending October 8 was 80° and the minimum was 20°. The mean temperature was 56°. There was 0.38-inch precipitation.

Third crop hay has been stacked. It averaged one and one-quarter tons to the acre. The weather proved exceptionally bad for hay curing. As a general rule, several days elapse between the first cutting and the final stacking but this year it required 15 days. Two rains at different intervals made it necessary to turn the shocks in order to dry them. As a result, the hay was not as green as usual and probably will lack some of its feeding value. Other work at the Station consisted of hoeing weeds, cleaning irrigation ditches, and preparing areas for fall grain seeding.

The lambs are undergoing their primary conditioning and are being fed barley with gradual increases in amounts until the planned requirements are reached. Twenty-four head of steer calves have been purchased for feeding purposes. These, likewise, are undergoing conditioning to accustom them to the final feeding ration and their surroundings.

Farm prices remain unchanged. Local prices for beef are 7 cents; hogs, 8-1/2 cents; lambs, 6 cents; eggs, 35 cents; and butterfat, 28 cents. Seven dollars is being offered for good alfalfa hay in the stack.

Station visitors during the period were F. B. Headley of the Nevada Station and Dr. S. C. Salmon of the U. S. Department of Agriculture. Dr. Salmon investigated the weed-control work being conducted under Dr. Rosenfeld's direction.

E. W. Knight



U. S. Scottsbluff Field Station, Mitchell, Nebraska

The maximum temperature for the two-week period ending October 15 was 86° and the minimum was 37° with 0.10-inch precipitation.

Station activities included harvesting potatoes, beets, hybrid corn, and sorghum varieties. Owing to the unusually long growing season, the late varieties of hybrid corn, and also of the sorghums, have had a very good opportunity to mature. The Atlas and Grohoma, among the sorghums, matured very late and may be considered as having possibilities for silage use only. Of the 34 corn hybrids on trial at the Station, only three or four may be considered as having possibilities for use in this territory, most of them being too late, or otherwise undesirable.

The sugar beet harvest in the Valley has been under way since October 7. Generally speaking, yields are very good while the sugar content is somewhat depressed. The six sugar-beet factories of the Great Western Sugar Company in the Nebraska district began operations on October 7.

Lionel Harris

U. S. Umatilla Field Station, Hermiston, Oregon

During the three-week period, September 18 to October 8, the maximum temperature was 97° and the minimum temperature was 40°. The precipitation totaled 0.51-inch.

The Station work during the period has consisted of taking notes on corn and sorghum preparatory to harvesting, harvesting the wilt-resistant alfalfa nursery and soy beans. Mr. Dana had completed his field work on September 30.

The Soil Conservation Service is reopening the Stanfield CCC Camp which originally operated as a reclamation camp. The work outlined will deal principally with the stabilization of blow areas on the range lands contiguous to the projects in the west end of Umatilla County and the north end of Morrow County. The first undertaking will be to tie down the blowing soil along 7 miles of the west extension canal which has resulted from a 25,000 acre brush and grass fire in July. Some channel straightening and bank stabilization will be done along the Umatilla River. The removal of the blow accumulation from the Station is definitely scheduled for the coming winter.

Station visitors included Messrs. Scofield and Wilcox of our Division; Messrs. McDonald, Dyer, Kent, Chapin, Anderson, and Gidgel of the Soil Conservation Service and Mr. D. E. Richards of the Union, Oregon, Station.

H. K. Dean

M I S C E L L A N E O U S

Mr. C. S. Scofield returned to the office on October 21.





NEWS LETTER

of the

DIVISION OF WESTERN IRRIGATION AGRICULTURE  
Bureau of Plant Industry, United States Department of Agriculture

(Not for publication without prior consent of the Division)

VOL. 40Washington, D. C., November 18, 1938NO. 18U. S. Belle Fourche Field Station, Newell, South Dakota

The maximum temperature for October was 91°; the minimum was 17°; and precipitation for the month was .08-inch, the lowest on record. The first killing frost occurred on October 18.

The 1,400 lambs were started on feed October 4 and 5. The usual number of lambs are fed in the valley. The prices of feed are: alfalfa, \$9 to \$10 in the stack; old corn shipped in \$1.15 per cwt.; barley, 85 cents per cwt.; beet tops, 50 cents per ton yield of beets; and pressed pulp, 60 cents per ton at the factory. The harvesting of corn, sugar beets and potatoes was completed during the month and all field work is well under way.

The W. P. A. project; laying sewer tile, building septic tank, pulp silo, house for fire equipment, and the completion of high board fence around sheep corral; was started during the month. The pulp silo is just about completed so this can be filled before the sugar factory closes.

Beyer Aune

Washington Irrigation Branch Station, Prosser, Washington

The maximum temperature for October was 77°; the minimum was 27°; and the precipitation was .92-inch.

Station activities included the harvesting of potatoes, sugar beets, and corn. The yield of potatoes on the rotation plots was very poor and the highest yield was 170 bushels per acre on Rotation 50. The potato yields were affected by the heavy June rain (1.15 inches in 24 hours) and wireworm injury. The yield of sugar beets was 14 tons per acre on Rotation 29. The highest yield obtained from spacing plots was from rows 20 inches apart and thinned to 8 inches in the row.

The sugar beets on the Outlook reclamation plots were harvested the first four days in November. The late plantings of sugar beets in the Yakima Valley were very poor this year and plots 1 and 6 did not do well. Plots 1, 6, and 4 were affected adversely by early thinning. The results are shown in the table on the following page.

Washington Irrigation Branch Station (Continued)

Plot	Flow	Seeding Date	Kg x 100 1 - 3 ft. Ave.		Preceding Crop	Tons Per Acre*
			March 1937	April 1938		
1	4/28/38	4/29/38	725	156	Sweet Clover	15.9
2	11/27/37	3/24/38	533	216	Barley	37.9
3	11/27/37	3/24/38	477	104	Sugar Beets	31.8
4	3/19/38	3/28/38	787	155	Weeds	26.8
6	4/28/38	4/29/38	916	147	Sweet Clover	19.8

\*Tare not subtracted - estimated tare 5 - 10%

The prices paid to growers for farm produce are as follows: Hay, \$8 to \$11 in the stack; potatoes and sacks No. 1, \$12 per ton, f.o.b. car; soft white wheat, 52 cents per bushel; barley and oats, \$16 and \$19 per ton, respectively; hops (1938 contracts), 19 cents and 21 cents per pound, baled, f.o.b. car; butterfat, 26 cents per pound; and eggs, 31 cents per dozen.

Carl A. Larson.

U. S. Newlands Field Station, Fallon, Nevada

The maximum temperature for the two-week period ending November 5 was 76°; the minimum was 24°; and the precipitation was .51-inch.

Work at the Station has consisted of plowing, repairing fences, burning weeds, hauling manure, and giving fertilized plots their fall treatments of gypsum and manure. The relief project is about completed. It is anticipated that no further work of this nature will be requested until spring.

The total yield of alfalfa hay on the Station area was 3.92 tons per acre. This was .8 of a ton less than last year's average. A cool, wet spring accompanied by severe aphid infestation resulted in a reduced first crop although the second and third crops were about normal. The yield of ensilage corn averaged 9-1/3 tons per acre. This is some 4-1/4 tons greater than in 1937. The damp weather of spring and showers later in the summer probably benefitted corn. The grain yields were below normal, particularly the spring wheat. The presence of rust greatly reduced spring wheat plantings. This fungus was present in a greater degree than has been the case during the past 18 years. Winter wheat was not so severely damaged as was the case in the spring sown grain.

The lamb and beef feeding experiments continue. The pen of lambs receiving chopped sweet clover has undergone a change as it was found that this lot was suffering a rapid loss in weight. As a result, the roughage now being fed is whole alfalfa although one pen is still receiving whole sweet clover and one, chopped alfalfa as a roughage. The beef steers are becoming accustomed to their surroundings. The turkey experiment will come to an end within the next 10 days. The recent steer experiment that was completed showed that alfalfa hay eaten when figured as hay equivalents closely followed the theoretical requirements as estimated by Morrison in Feeds and Feeding. The time spent by the steers on pasture resulted in loss in weight. However, this loss was quickly regained when hay was again fed.



U. S. Newlands Field Station (Continued)

Farm prices remain low. Eggs are 38 cents; butterfat, 29 cents a pound; potatoes, 90 cents per hundred; beef at 7-1/2 cents per pound; lambs, 7-1/2 cents per pound; and pork, \$7.50 per hundred.

On November 2, the Superintendent visited with Mr. Hastings in Reno. Mr. Hastings was enroute to Sacramento.

Station visitors during the period were: F. B. Headley and L. E. Cline of the State Station staff. On November 1, some 25 or 30 dairymen met at the Station to acquaint themselves with our dairy work. From here they visited several other dairies. They were accompanied by several county agents from nearby counties and two representatives of the Holstein-Friesian Association.

E. W. Knight

U. S. Scotts Bluff Field Station, Mitchell, Nebraska

The maximum temperature for the three-week period ending November 5 was 80°; the minimum was 14°; and there was .52-inch precipitation. The last killing frost in the spring occurred on May 8; and the first frost in the fall was on October 18. Previous to 1938, October 13 has been the latest date representing a first fall frost.

Station activities included digging sugar beets, hauling feed for livestock, harvesting vegetable crops and cutting beet tops and corn fodder for ensilage.

In view of the recognized high feeding value of beet tops, and of the fact that considerable of this value is lost by the ordinary method of handling tops, the Station has inaugurated an experiment involving a determination of the practicability and value of putting fresh beet tops and dry corn fodder in the silo together. The tops and corn fodder are being cut on a ratio of two parts of tops to one part of dry fodder by weight. The tops and fodder are mixed while cut. It is proposed to feed this ensilage mixture to one pen of lambs in comparison to other roughage feeds.

The local canning factory ceased operations on October 18. Owing to the prolonged season, tomatoes in the valley produced a fair yield but the fruits were of rather poor quality. Psyllid and bacterial canker damaged extensively both the quality and yield of tomatoes. The cannery's operations with sweet corn proved to be excellent but with green beans, the results were poor because of the bacterial blight disease.

During the past year, 188 farmers participated in a tree-growing contest sponsored by the Chamber of Commerce. Most of the farmers participating in the contest are located on the sandy soils of the valley and have been encouraged to grow trees to protect their soils from blowing. A recent survey of the tree plantings indicates that the farmers have taken considerable interest in trees as a means of protecting and improving the fertility of their sandy soils. Many of the plantings have been cared for remarkably well under very difficult conditions.

U. S. Scotts Bluff Field Station (Continued)

This Station in cooperation with the local Chamber of Commerce and the Scotts Bluff county agent held a fall feeders' meeting at Scotts Bluff on November 2. Approximately 125 cattle and sheep feeders attended. The Station proposes to conduct a similar meeting each fall season before the majority of cattle and lambs are placed on feed. The object of this meeting will be to assist feeders in building rations for their feeding operations and aiding them in utilizing the variety of feeds which they have on hand.

Station visitors included Messrs. Clayton Watkins, of the University of Nebraska, George Trimberger, E. J. Boschulte; Professors H. P. Davis, H. J. Gramlich, and Ray Thalman; the latter three also from the University of Nebraska.

Lionel Harris

U. S. Yuma Field Station, Bard, California

The maximum temperature for the two-week period ending October 29 was 93°; the minimum was 40°; and there was no precipitation recorded.

Warmer than normal temperatures and the lack of rains have hastened the harvesting of the summer crops and the planting of fall crops. Cotton picking and ginning has slowed up as growers are now waiting for frost before making the second and final picking. The four operating gins on the project show only 2,211 bales ginned for the season to date as compared with 6,985 bales last year. The damage to the 1938 crop by insects is reflected in the low yields and low prices being obtained. Alfalfa seed prices remain low with some few sales being made at 15 cents per pound. Alfalfa hay prices are still around \$8 per ton baled.

Station activities included the harvesting of the cotton and grain sorghum crops; the planting of flax, barley, wheat, lettuce, carrots, and new alfalfa fields; the picking and packing of the grapefruit and date crops; plowing and releveling land for winter grains; and general irrigating and cultivating.

The Imperial Dam and All-American Canal were dedicated by Secretary Ickes on October 18. Sufficient water was turned into the new canal to test out the dam and desilting structures only. The canal will not be tested until a later date.

E. G. Noble



of the

DIVISION OF WESTERN IRRIGATION AGRICULTURE  
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NO. 19

U. S. Huntley Field Station, Huntley, Montana.

The maximum temperature for the two-week period ending November 12 was 63° and the minimum was -8°. There was .85-inch precipitation in the form of rain and snow. The first severe freeze of the season occurred on November 11 when the minimum temperature registered -8° following a 4-inch snowfall.

The harvest of sugar beets in this section was completed and other field work including plowing is well advanced. The farm price of feed crops has advanced slightly with hay selling at \$5 to \$6 per ton and feeding grains, including barley and oats, at 75 cents to 80 cents per cwt.

Station work during the period included plowing and working down fall plowed lands. This work was nearly completed.

The lamb-feeding project, which is cooperative with the Montana Experiment Station, was started on November 5. Five lots of eighty lambs each are included on various rations. These lambs had an average weight of 68.5 pounds and are from the range flock of the Montana Experiment Station at Bozeman.

Dr. R. T. Clark and George Severson of the Animal Husbandry Department of the Montana State Experiment Station spent two days here in starting the lamb-feeding project.

Dan Hansen

Washington Irrigation Branch Station, Prosser, Washington

The maximum temperature for the three-week period ending November 26 was 60° and the minimum was 9°.

Station activities included harvesting and shelling corn from the rotation plots. The highest yield obtained was 69.5 bushels per acre from rotation 78 where corn was produced on alfalfa sod. The mean yield in bushels per acre of shelled corn with 12 percent moisture from all rotation plots was 46.7.

Washington Irrigation Branch Station (Continued)

The Utah-Idaho Sugar Company is paying \$4.25 per ton as the initial payment for sugar beets. The company estimates the Federal allotment payment at \$1.75 per ton.

The Mercer Brothers Sheep Company has erected pens preparing for the arrival of 3,000 ewes from the range. They have completed the chopping and stacking of 400 tons of hay. This will be the third year that the Mercer Company has operated a lambing crop at the Station.

Carl A. Larson

U. S. Newlands Field Station, Fallon, Nevada

The maximum temperature for the two-week period ending November 19 was 55° and the minimum was 6°. There was .23-inch precipitation during this period. The mean wind velocity was 1.66 miles per hour. The continued mild weather has made it possible to continue field operations which have included hauling manure, plowing and cultivating previously plowed alfalfa areas.

The WPA Station improvement project has been completed. The work done has added to the appearance of the Station and has broadened its scope of investigational work by providing corrals and shelters for steer feeding experiments.

The turkey-feeding experiment was completed on November 15. On that day all the birds were killed and dressed. Mr. Headley was present at the killing and numerous body measurements were taken on each bird. The measurements will later be correlated with the different rations.

A recent report of the irrigation district superintendent states that the district has started the cleaning and repairing of some of its drainage systems. A portion of the program calls for cleaning one of the main drains into which a large percentage of the feeder drains empty.

Station visitors during this period were F. B. Headley of the State Station staff, L. E. Cline of the Extension Service, Wilber Stodeick, County Agent of Douglass County, Professor Jones and Mr. Hickley of the Portland Cement and Gypsum Company. The latter were interested in the gypsum reclamation work that has been done at this Station.

E. W. Knight

U. S. Scotts Bluff Field Station, Mitchell, Nebraska

The maximum temperature for the three-week period ending November 26 was 61° and the minimum was -2°. There was no precipitation.



U. S. Scotts Bluff Field Station (Continued)

Station activities included cutting beet tops and corn for silage, grinding alfalfa for dairy and lamb-feeding experiments, weighing lambs for experimental feeding purposes, preparing a seed bed for winter seeding test with sugar beets and completing the first planting of this test.

The North Platte Valley Cooperative Poultry Marketing Association has recently completed the construction of a poultry dressing plant at Henry, Nebraska. Three car-loads of turkeys have been dressed in the new plant and were shipped to eastern markets.

The first payment made by the Great Western Sugar Company to farmers for the 1938 sugar beet crop was made November 20. The mean payment for beets grown in the North Platte Valley and also in Colorado amounted to \$4 per ton. The beets tested 15 percent sugar. Generally speaking, growers throughout Nebraska and Colorado are very much dissatisfied with the first beet payment this year, which is approximately 60 cents per ton less than the first payment last year. Growers' organizations have protested that the initial payment made this year will not cover production costs, and that growers of sugar beets are not getting a fair division of the earnings of the sugar beet industry.

Lionel Harris

U. S. Yuma Field Station, Bard, California

The maximum temperature for the two-week period ending November 19 was 81° and the minimum was 32.5°. The mean wind velocity was 2.2 miles per hour. There was no precipitation.

Farming activities on the Yuma project at this season of the year include the picking and ginning of cotton; harvesting a late crop of alfalfa hay; planting, thinning and cultivation of lettuce; renovating and reseeding old alfalfa fields and seeding new fields; picking and packing grapefruit; pasturing and feeding beef cattle and sheep; and harvesting the pecan crop.

Early planted lettuce will be ready to cut the first week of December. With a large acreage of winter lettuce in prospect, it has been mutually agreed among the growers to limit shipping to the four and five dozen per crate sizes.

Station activities have included the harvesting of the cotton and grain sorghum tests; disking and plowing stubble fields; planting barley, sweet clover, wheat and alfalfa plots; planting strawberry and stock beet test plots; leveling land and trapping gophers.

Mr. S. H. Hastings visited the Station and project on November 11, 12, and 13.

E. G. Noble

M I S C E L L A N E O U S

Mr. Hastings returned to the office on Monday, November 28.





## N E W S L E T T E R

of the  
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NO. 20

U. S. Belle Fourche Field Station, Newell, South Dakota

For November, the maximum temperature was  $58^{\circ}$  and the minimum was  $-12^{\circ}$ . Precipitation was .60. This is the only month of the year that the precipitation was above normal. Most of this occurred in the form of snow, 4.6 inches of which was recorded. The snow drifted badly and was of no benefit to bare fields. The precipitation for the year to date is still short 5.89 inches.

The field work for the month consisted of plowing, land leveling and husking corn. During the sixty days that the lambs have been on feed the average gain has been about  $1\frac{1}{4}$  pound per day. There are some 70,000 lambs on feed in the district. If the present price of fat lambs continues, the feeders should receive a good price for their feed and absorb some of last year's losers.

The beet harvest was finished in the district the first week in November. The average yield was 13 tons per acre and the sugar content was 16.3 percent to date. The first payment from the factory to the growers was \$4.50 per ton. According to a report, this is one of the most successful seasons since the factory was built.

Alfalfa hay in the stack is selling from \$9 to \$10 per ton; beet tops, 50 cents per ton yield; barley, 85 cents per cwt.; and corn shipped in by carload lots, \$1.05 per cwt.

Beyer Aune

U. S. Huntley Field Station, Huntley, Montana

During the three weeks ending December 3, the maximum temperature was  $55^{\circ}$ ; and the minimum was  $-6^{\circ}$ . There was .09-inch precipitation. Following a light snowfall and sub-zero temperature for a short time early in this period, favorable weather for outside work has prevailed.

U. S. Huntley Field Station (Continued)

The initial payment of \$4.50 per ton for sugar beets was made on November 15. Additional payments will probably be made by the Sugar Company as sugar manufactured from the crop is marketed. This, together with benefit payments under A.A.A., may bring the total price to more than \$7 per ton. The average yield of beets for this district was reported to be 12.95 tons per acre which is the highest yield for the past five years.

Corn yields from the irrigated rotations and from the maximum production experiments have been tabulated for the past season. The lowest yield in the rotations was from continuously cropped rotations 6 of 25.3 bushels and the maximum was from 69 of 69.2 bushels per acre. The mean yield for the 9 plots was at the rate of 54 bushels per acre. In the maximum production experiment there was harvested 84.8 bushels per acre.

Station activities have included repairs to buildings and machinery and harvesting of corn.

Dan Hansen

Washington Irrigation Branch Station, Prosser, Washington

The maximum temperature for the two-week period ending December 10 was 60° and the minimum was 12°. The rainfall amounted to .38-inch.

Station activities consisted of manuring and plowing sugar beet plots. Other activities at the Station included harvesting field corn.

The sugar beet acreage harvested in the Yakima Valley and Walla Walla district amounted to 15,882 acres. The average yield of beets in this area was 16 tons per acre. It is expected that the acreage allotted for this district next year will be around 11,000 acres.

Carl Larson

U. S. Scotts Bluff Field Station, Mitchell, Nebraska

The maximum temperature for the three-week period ending December 17 was 62°; the minimum was -2°. There was no precipitation.

Station activities during the three weeks included hauling and stacking beet tops from the rotation plots, the routine of caring for the livestock, shucking and hauling corn from the rotation plots in Field K and making the second planting of the winter test of sugar beets. The beet tops are being weighed and a sample taken for moisture determination.



U. S. Scotts Bluff Station (Continued)

The yields of potatoes from the irrigated rotations for the past season have been tabulated. The minimum yield of 81.3 bushels was harvested from rotation 26 and the maximum yield was from rotation 64 and was at the rate of 274 bushels per acre. The mean yield from all rotations was 172.9 bushels per acre.

It is estimated that lamb feeding in the Scotts Bluff area has decreased twenty-five percent which is chiefly due to the losses financially sustained last season.

The sugar beet slicing campaign closed Monday at the Scotts Bluff factory after a 63-day campaign in which 189,000 tons of beets were processed into sugar. The Mitchell factory is expected to end a 61-day campaign Tuesday.

The corn yields from the irrigated rotations have been compiled. The maximum yield was 31.7 bushels from rotation 26 and the minimum was 20.6 bushels per acre from continuously cropped plot 6. The mean yield from the 6 rotations involved was at the rate of 26.0 bushels per acre.

Station visitors during the three-week period were: Dr. C. S. Boucher and Dean W. W. Burr.

On Thursday, December 1, Mr. Lionel Harris, addressed the Rotary Club at Ogallala, Nebraska, and also a meeting held during the afternoon for farmers and livestock men, in order to stimulate greater interest in the feeding of livestock. He also attended the annual meeting of the Nebraska State Irrigation Association, which was held in Scotts Bluff, December 8 and 9, and gave an informal talk on the subject of "Self Supporting Crop Rotations".

Lionel Harris

U. S. Yuma Field Station, Bard, California

The maximum temperature for the two-week period ending December 17 was 85°; the minimum was 39°; and precipitation was .63-inch. The rainfall recorded on the 15th and 16th was part of a general storm which covered southern California and portions of Arizona. This storm broke one of the longest dry spells on record in this area.

Some slight damage is reported for the winter lettuce crop which is in mid harvest. Prices for this crop have been unusually good so far this season.

### U. S. Yuma Field Station (Continued)

The harvesting of the 1938 cotton crop is about completed. The four operating gins report, as of December 16, a total of 3,860 bales ginned for the season.

The work of the station has included the picking and ginning of cotton; planting barley, alfalfa and winter legumes; planting the cereal nursery and the alfalfa wilt resistant nursery plats; leveling land; manuring lands in the rotation test; general irrigating and cultivating.

Mr. C. O. Grandfield of the Division of Forage Crops and Diseases with headquarters at Manhattan, Kansas, spent the period, December 1 to 8, at the station supervising the planting of the alfalfa wilt resistant nurseries. Dr. R. A. Brink of the University of Wisconsin and Dr. E. G. Anderson of the California Institute of Technology also visited the station in connection with these nurseries.

E. G. Noble